First Pictures from Dallas Show . . . . . *Pp. 24-25, 28-29*

AIR CONDITIONING HEATING & REFRIGERATION NEWS
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RESIDENTIAL — COMMERCIAL — INDUSTRIAL
February 15, 1960

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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Senator Romney? Or Vice President?
Mason to Romney
Business Evangelist
Political Sex Appeal
The Human Side of an Extraordinary Man
He'd Be No Novice In Washington
George's Scattergood Speeches
Here's What He Stands For
Competition at Its Sharpest

Senator Romney? Or Vice President?

At a testimonial dinner on the occasion of his 85th birthday, "elder statesman" Vernon J. Brown quipped:

"I listened to George Romney on TV last night. He said Michigan was politically bankrupt.

"I don't agree with Mr. Romney. Michigan has a surplus of cheap politicians."

There's a grass-roots movement afoot in Michigan to "draft" George Romney, Kelvinator (American Motors) President, as a Senatorial candidate. "Dope" believes he speaks for every subscriber who ever has come under the spell of this remarkable gentleman, in praying fervently:

"George Romney, America needs you!"

After the regrettable recent demise of Chevrolet's exciting Bill Power, by acclaim George Romney has succeeded to the title of "Best Salesman on Earth."

He'd make a marvelous Senator—or Vice President.

Mason to Romney

Romney's predecessor at Nash-Kelvinator, George Mason, was an unusually shy man. Also, he was inarticulate (and actually inaudible through his teeth-clenched cigar).

Mason was a production genius, but flatted out when it came to public relations and SALESMANSHIP.

To Mason's credit, he hired and trained a successor (Romney) who did and does have a flair for showmanship and public relations.

Romney is a publicity man's dream. He has an instinct for

(Continued on Page 10, Col. 1)

York Announces Commercial, Room Units

YORK, Pa.—A versatile line of commercial packaged air conditioning equipment and a room air conditioner line featuring a new compressor were unveiled by York Div., Borg-Warner Corp., at distributor meetings.

The commercial packaged equipment includes "Champion" and "Embassy" series.

According to Dave H. Crawford, York's commercial packaged products sales manager, the air-cooled Champion line is entirely a "remote" series, with an outside heat exhaust section and a variety of inside evaporator sections. Champions are highlighted by the exclusive York low-ambient feature which enables these units to operate during cold weather periods, it was stated.

The new Champion line includes six outside exhaust sections, with capacities ranging from 4.7 to 15.7 tons. The CA120 and CA180 also feature twin system operation which delivers step capacity to provide economical operation under all conditions, the announcement said.

The inside coil sections are available in self-standing, ceiling suspended, or direct-to-ductwork units. A complete line of plenum models is available for elimination of ductwork. Coils are also available for direct application in ductwork, using existing blowers and ductwork.

Crawford explained the versatile and varied applications of the Champion line. For example, the model CA120 outside exhaust section can be used with

(Concluded on Page 27, Col. 1)

Product Improvements Highlight Dallas Show; Over 3,200 Register for ASHRAE Meeting

* * *

Delay Decision on New Lab

DALLAS—Semiannual meeting of the American Society of Heating, Refrigerating & Air-Conditioning Engineers Feb. 1 to 4 here was carried out in the "big" style of doing things, as one expects to find in Texas, and the attendance was rewarding to those who had worked so diligently for the success of the meeting — more than 3,200 registered, of which better than 2,200 were members, over 500 registered as guests, and some 500 wives.

D. D. Wile

The meeting and the deliberations of the ASHRAE Council which were made public produced no outstanding news as such. The decision to construct new laboratory facilities to be operated by the society was deferred to a later date. It was learned on good authority that the choice of a site for the laboratory facilities has narrowed to three midwest cities, one of which is Cleveland, were the present laboratory is located.

ASHRAE Standard 30-P "Methods of Testing for Rating Liquid Chilling Packages" was submitted and approved by the membership. There was no general report of activity on other standards. A number of relatively minor changes were made in the by-laws of the society, such as the following:

When the executive committee determines matters of poli-

(Continued on Page 4, Col. 1)

ASHRAE Exposition Set for Feb., 1961

The 15th International Heating and Air Conditioning Exposition, the regularly scheduled every-other-year show sponsored by the American Society of Heating, Refrigerating & Air-Conditioning Engineers, will be held in February, 1961 in Chicago. The 1963 Exposition has been scheduled for New York City.

Refinements Will Aid Installer

DALLAS—A convincing demonstration that the air conditioning industry now has the products to handle any kind of application in the manner best suited to the buyer's best interests, and with improvements in installation and operating procedures and costs undreamed of only a few years ago, came through at the 2nd Southwest Heating & Air Conditioning exposition here the first week in February.

Attending the show which filled the splendid new air conditioned Dallas Memorial Auditorium for the first time, some 6,000 to 9,000 visitors from the industry (the figure varying according to whose estimate of attendance you chose to believe) saw not so much in the form of new innovations as they did of refinements that will enable the installer to do a better job with less complicated methods, and possibly less direct labor.

One universal note seemed to be the expansion of lines of products by manufacturers of both broad lines of equipment and confined lines. A major producer of industrial and commercial equipment showed a heat pump for the first time. Those producers who have been identified primarily with package air conditioners showed broad lines

(Concluded on Back Page, Col. 2)

This story reports in a general manner the new developments and trends which were observed at the Southwest Exposition. The picture coverage of some of the products displayed, starting on page 24, plus advertisements published in the NEWS, will provide more detailed information.

'Cube' Filter Claims Low Cost

DALLAS — Substantial savings in filter costs are claimed for a uniquely constructed "cube" replacement air filter introduced by Union Carbide Development Co., a division of Union Carbide Corp. at the second Southwest Heating & Air Conditioning Exposition.

While combining high efficiency with exceptionally low pressure drop throughout its useful life, the new "Ulok" unit is demonstrating in field tests in the New York metropolitan area a service life at least six times longer than conventional throwaways and permanent metal type filters, according to Kenneth Hillas, Carbide's project manager for air filters.

The high capacity filtering ac-

(Concluded on Page 27, Col. 4)

BEHIND PAGE ONE . . .

COMMERCIAL Air Conditioning
Duct Insulation Method Reduces Condensation By Reducing Longitudinal Seams 15

RESIDENTIAL Air Conditioning
'Forced Humidifiers' (5) 19

- **What type of Cooling Equipment Predominates?**
  Economic Considerations, Application Problems Preclude Discernible Trend 2
- **Business Policy**
  Ideal, Principle, Purpose Serve As Rudder In Attaining Goals 9
- **Electric Heat**
  It Points Up Old Problems of Insulation, Moisture Protection 16
- **Tech Center**
  Applied Electrical Theory (10) 22
- **How Gases Can Foul System, and What To Do About It** 26

Holds Mitchell Stockholders Liable for Damages on 'Misrepresentation' Charge

CHICAGO — In an opinion issued recently by Superior Court Judge John A. Sbarbaro, the Court said that Bernard A. Mitchell and other former stockholders of Mitchell Mfg. Co. were liable to Cory Corp. for damages that may total as much as $2 million.

The opinion was issued as the result of a suit filed by Cory late in 1958 in which the defendants were charged with fraud and breach of warranty in connection with Cory's purchase of all of the capital stock of Mitchell Mfg. on Nov. 7, 1955.

Cory contended, among other things, that certain liabilities of Mitchell Mfg. were not reflected on the books and records of that company.

In his opinion, Judge Sbarbaro said:

"The evidence overwhelmingly sustains the plaintiff's contentions that the books and records were not kept in accordance with good accounting practices and that the defendants deliberately and willfully concealed vital information from the plaintiff for the purpose of inducing

(Continued on Page 6, Col. 1)

Trend Toward Particular Type Not Discernible

Economic Considerations, Application Problems Loom Large In Determining What Kind of Air Conditioning Is Being Used

DALLAS — Economic considerations and problems in application are prime determining factors in the kind of air conditioning systems that are being purchased in today's market.

Since this is the case, there is no major discernible trend towards a concentration on one type of equipment, and most of the manufacturers with broad lines of products are expanding and improving all of their lines.

Purchasers are becoming more knowledgeable on what constitutes "true" air conditioning, with the result that installations are becoming more in terms of the variety of equipment and controls, and true flexibility must be provided in many large buildings, where cooling and heating may be desired simultaneously in different parts of the building.

At the same time, the manufacturer has to strive to simplify his equipment, put more "engineering at the factory" into it, and make it more compact so that costs and space requirements will not be out of line.

Another reason for simplification and as much factory assembly as possible is that a shortage of skilled installation technicians to install the equipment that the market will demand in the next decade looms up in the predictions of all those who have studied the market and the supply of skilled manpower.

In central residential air conditioning, there seems to be emerging from the scores of firms offering products in this field some leaders, and it would appear likely that the bulk of the business would be done by these leaders. If this is so, it is a change from the pattern in the warm air heating field, where sales are spread over a considerable number of firms.

Probable reason for this is that as the public is sold and sells itself upon the more complex "true air conditioning" installation, only those firms who are dynamic enough in their engineering, manufacturing, and sales efforts will be able to capture the market.

Key to market growth in central residential air conditioning is the existing home market, and the hoped-for growth will probably be realized only when a sufficient number of responsible dealers will recognize the possibilities of the market and can be geared up to do an effective selling job.

These are the highlights of some of the viewpoints of top officials of York Div., Borg-Warner Corp. given at a press conference just preceding the opening of the Southwest Heating & Air Conditioning Exposition here. The officials spoke "off-the-cuff" and answered questions by members of the press. Those present included:

Henry M. Haase, president, York Div.; Austin Rising, vice president and director of marketing; Alwin Newton, vice president and director of engineering; M. S. Lebair, vice president and director of trade relations; J. J. Floreth, vice president and director of services; E. F. Peslar, vice president and director of production; C. J. Schurman, sales manager, engineering machinery; Fred Wood, manager, air conditioning sales; William Goldsmith, manager, residential heating and cooling; W. L. Divine, manager, refrigeration sales; Todd Owens, manager, advertising and sales promotion; Ben L. Williams, director of public relations.

'Firm' Orders Far Ahead of Last Year

Haase reported that orders received for York products thus far "are ahead of last year all across the broad," and he emphasized that "these orders are on a firm basis, with specified shipping dates." The York Div. president also pointed out that the company is expanding its lines of heat pumps, packaged chillers, and other products that have gained in increased popularity in recent years, in line with the need for flexibility in product to serve the market adequately.

An example of how "economic considerations and fitting the right equipment to the application" are the prime factors in selection of equipment in today's market, overriding any "trend" to any particular kind of equipment, was cited in the instance of one industrial firm who purchased a 500-ton York heat pump system for one job, and is using 300 tons of package units in another of its facilities.

Shopping Center Picture Has Changed

Shopping centers were described as examples of how there can be variations in "economic considerations" which affect the selection of equipment. Some of the early ones were put up by major retail stores, who furnished everything, including the air conditioning, and leased complete facilities to those who wanted a place in the center.

Many of the more recent centers are merely real estate developments, in which the trend has been for the lessee to provide his own furnishings and air conditioning, and this has led to more individualized installations.

Adequate Field Personnel May Be Biggest Problem for Many Years

The York executives were in general agreement that what may be the industry's biggest problem for many years will be that of having enough personnel in the field to sell and install the industry's products.

Questioned as to whether he thought the present *method* of distribution of the industry's products (through independent distributing and retailing factors) was the proper method, and likely to continue, Haase said:

"York is dedicated to the plan of independent distribution now and in the foreseeable future. What might be the case 10 years from now, I cannot predict, any more than I could predict positively the kind of products we may be making and selling at that time."

THE ULTIMATE IN QUALITY AND PERFORMANCE

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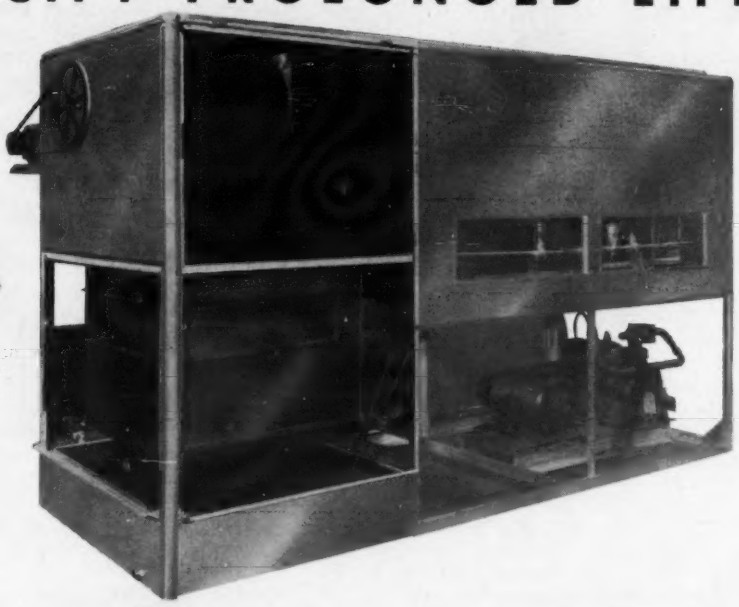


Governair's COPPER FITTED EVAPORATIVE CONDENSER

FEATURES:

ALL COPPER AND BRASS water pan, float valve, condenser coil, spray tree, eliminators, blower scrolls. Standard galvanized blower wheels and stainless steel shaft.

WRITE FOR COMPLETE INFORMATION

Find it Fast in the Yellow Pages GOVERNAIR

You have a definite feeling of confidence when you specify Governair's COOPER-FITTED evaporative condenser with its many fine features.

ALL spray water is contained within a COPPER WATER JACKET. This exclusive DOUBLE WALL CONSTRUCTION assures product longevity and lower maintenance. In fact, throughout the entire unit, you find QUALITY . . . with no worry about faulty galvanizing or temporary corrosion protection.

You also have an extremely WIDE SELECTION, as this evaporative condenser is supplied for REMOTE installation or as an integral part of Governair Corporation's self-contained PACKAGED equipment . . . Conventional; Multi-Zone (as pictured); and Water Chillers.

GOVERNAIR

4840 N. SEWELL • OKLAHOMA CITY

Thief Eludes Dragnet

Super-Sleuthing Recovers Stolen 'Spotaires' 12 Mos. after Disappearance from Job Site

LOS ANGELES — Want to buy (at bargain prices!), some 38 new Drayer-Hanson air conditioning units—with a case history reading like a plot for a "Dragnet" episode?

The "Spotaire" low-c.f.m. units, which have been listed on Los Angeles police records as "hot" property, are now stockpiled back at J. Herman & Co., Los Angeles air conditioning contractor, who originally ordered them from the West Coast manufacturer.

They reached the job-site—the new West Covina motel—in good shape, more than a year ago. But before installing crews could work up to them, they disappeared, one dark night, without a trace—all 38 of them in their factory crating.

The thief is still at large. The purchaser of the stolen goods, however, was found and recently pleaded "guilty" in court to a misdemeanor count.

According to Harry Wolfe, spokesman for J. Herman Co., it took 12 months of cooperation, record-keeping, and lots of super-sleuthing to unearth the missing D-H units.

Wolfe set up an internal office system at his firm whereby all trades and unions reported to him all equipment that was installed of a similar nature. Checking out each job, the stolen units were eventually tracked down to the alleged illegal purchaser.

As serial numbers on units had been removed, the burden of proof at the trial rested with the accuser, with the contractor firm have to prove the units were theirs. This was done through a process of elimination, whereby it was shown that all other jobs, during this period, were accounted for in the customary manner.

Backing Wolfe at the trial were Drayer-Hanson representative, and the sales application engineer from Air Conditioning Supply Co., who handled the transaction.

The 1959 summer's heat at West Covina motel was controlled via replacement order of Drayer-Hanson individual-room units.

But that leaves one question, according to installer Wolfe:

"Is there some sort of industry Valhalla where 'hot' goods can go legitimate," he asks?

Or, better yet, does someone care to step forward with a legitimate order?

Westinghouse Adds Larger Compressors At Staunton Plant

STAUNTON, Va.—The compressor manufacturing facilities at the Westinghouse air conditioning division plant here have been expanded to include units rated at 20 to 100 tons.

The division has been manufacturing certain smaller sized compressors but the added facilities will provide larger units for use in cooling and air conditioning equipment such as packaged chillers, condensing units, and 40 and 50-ton "Unitaires"—the company's self-contained, water-cooled air conditioners, it was pointed out.

According to Raymond K. Serfass, division general manager, "The additional facilities will improve the efficiency of our operations since the manufacture of components for large air conditioning equipment will now be completely integrated. The expansion also reflects our increased emphasis in the field-assembled equipment field."

In addition to the industrial equipment, air conditioning units for residential and commercial applications, heat pumps, and residential electric heating equipment are manufactured at the Staunton plant.

Recold Sales Up 30% for 1959

LOS ANGELES — Recold Corp.'s total sales volume for 1959 was up 30% over the 1958 calendar year, it was announced by H. T. "Hy" Jarvis, president.

A significant part of this increase came as a result of the increased sales of the Eastern Div., which began warehousing operations in Elizabeth, N. J., two years ago, it was said.

The success of Recold's eastern activities has prompted the company to begin manufacturing much of its line of air conditioning and refrigeration products at a new plant in Columbus, Ohio. The warehousing operations have also been consolidated into this location.

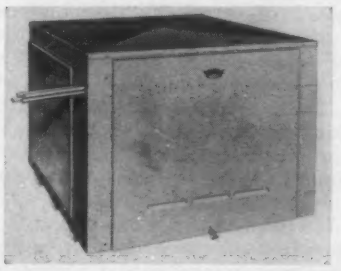
Also significant in Recold's over-all sales rise was a 43% increase in export sales.

5-Ton Gaffers & Sattler Condensing Unit Claims Greater Capacity, Lower Price

LOS ANGELES—A new 5-ton air conditioning condensing unit for homes and small commercial concerns has been introduced by Utility Appliance Corp.'s Gaffers & Sattler product division.

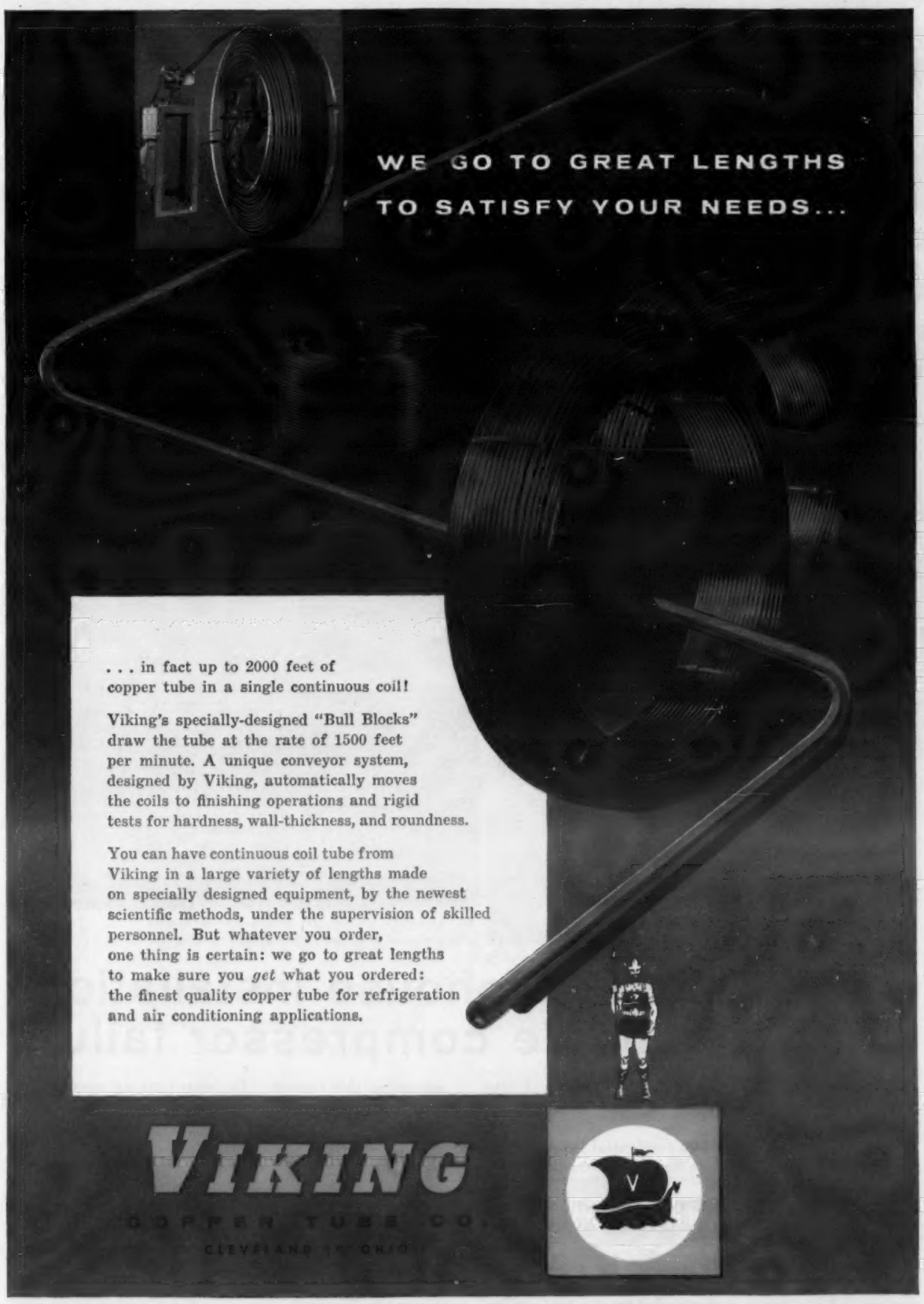
The unit has an increase of 6% in capacity above its former model and will sell at a lower cost than previous 5-ton models, the company said. Its certified rating, under ARI Standard 210-58, is 60,000 B.t.u./hr. at 95° ambient, according to the announcement.

Featuring a new condensing coil, more efficient internal tubing, and a new heat pump type compressor, the model G&S 5th. single-phase and three-phase unit is available.



GAFFERS & SATTLER 5-ton air conditioning condensing unit features new condensing coil, more efficient internal tubing, and a new compressor.

Utility's Gaffers & Sattler product division also manufactures Mission Water heating and heating equipment, Utility evaporative air cooling units, industrial blowers, and gas ranges.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. . . in fact up to 2000 feet of copper tube in a single continuous coil!
Viking's specially-designed "Bull Blocks" draw the tube at the rate of 1500 feet per minute. A unique conveyor system, designed by Viking, automatically moves the coils to finishing operations and rigid tests for hardness, wall-thickness, and roundness.
You can have continuous coil tube from Viking in a large variety of lengths made on specially designed equipment, by the newest scientific methods, under the supervision of skilled personnel. But whatever you order, one thing is certain: we go to great lengths to make sure you get what you ordered: the finest quality copper tube for refrigeration and air conditioning applications.
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CLEVELAND 16, OHIO

ASHRAE Dallas Meeting--

(Continued from Page 1, Col. 3)

cies between meetings of the board of directors, its actions must be ratified by the board of directors at a regularly scheduled meeting.

Local chapters shall not issue publications other than the official chapter roster without prior approval by the board of directors.

Chairman or vice chairmen of society committees must be full members or associate members, except for certain exceptions that will be specified.

A limitation if placed on the number of members on the nominating committee from any one chapter or any one region.

This was the first really "true" meeting of ASHRAE since it was formed from the merger of ASHAE and ASRE, and in general the planned program and other activities went off smoothly. There were a few areas of confusion, such as the somewhat amusing incident of an important committee that was in session, when suddenly one member called for a roll-call of the bona fide members, and three of those in attendance found they were no longer on the committee.

Officers of the society and the rank-and-file of the membership were extremely complimentary of the work of the host chapters, Dallas and Ft. Worth. It was reported that the membership in these two chapters had a tacit agreement from purchasing factors in the air conditioning and refrigeration field in their territories not to put out jobs for bidding during the period of the meeting, so that the members could devote a maximum amount of their time to the meeting.

Wile President Until June Meeting

D. D. Wile, Recold Corp., is the new president of ASHRAE. Wile and other officers will hold office until the annual meeting this coming June in Vancouver, B. C., under the plan for succession of officers established by the merger. W. A. Grant, Carrier Corp., is first vice president; R. H. Tull, Westinghouse Electric Corp., is second vice president; John Everetts, Jr., Charles S. Leopold Co., is third vice president; and F. Y. Carter, Detroit Controls Div., American-Standard, is treasurer.

New directors elected at the meeting include: Donald Angus, J. W. Chandler, James Downs, J. H. Fox, Walter Heywood, Fred Janssen, George A. Linskie, E. K. Wagner, L. K. Warrick, and J. G. Woodroof.

A session which drew considerable interest among engineers was the Air Conditioning Symposium on "Engineering Responsibilities" at which both general corporation executives and engineering executives offered their viewpoints on the subject, with the role of moderator taken by W. R. Moll, who handles the sales of air conditioner products to Sears, Roebuck by Whirlpool Corp.

Engineer Must Become Backbone of Integrated Cooperative Whole

Declaring that while the industry is still "basically technical," Airtemp's President Paul M. Augenstein said that "there is quite as important a requirement for the engineer to improve his knowledge of the accounting, the sales, and the executive problems of the industry.

"Far too often," he asserted, the engineer, in taking care of his segment of responsibility, becomes inbred to the extent that he sees engineering for engineering's sake alone and not as it should be—the backbone of an integrated, cooperative whole, bringing a needed and desirable benefit to humanity. In the final analysis, he must design the product balanced to suit the customer, knowing all of the technical possibilities and at the same time the limitations, and using this information positively and never as a roadblock."

Market Requirements Change Constantly

The requirements of the market place are a constant state of change, it was pointed out by Austin Rising, vice president and director of marketing for York Div., Borg-Warner Corp. Thus, the company which will make the most progress in increasing sales and profits, as he sees it, will be one in which the engineering function is brought closely to the demands of the market and is well integrated with the sales effort.

"Ten years from now—1970—the products being designed, manufactured, and sold in today's factories will, if past business history is followed, be out of date and unacceptable," Rising declared.

"Find out what the customer really wants—or, more important, will want. To be successful, a design engineer must design a product which customers will buy at a profit to his company. Certainly, marketing will be a source of information and assistance to him."

Plea for Equal Status Voiced by G-E Engineer

A plea that engineers get equal status in management with marketing or sales, finance, and manufacturing, was made by W. G. Spiegelhalter, chief engineer, General Electric Co. Room Air Conditioning Dept.

Engineers must also communicate clearly and with authority their position in business, because the engineers' role in design of air conditioners may be quite difficult unless he makes himself heard and understood when the specifications of the product are written.

Engineering responsibility includes new product planning in a durable consumer goods company where there are yearly model changes, declared Gerhardt Stoll, director of research, Whirlpool Corp. The annual changes should be a combined responsibility of engineering and marketing.

"Engineering should be consistently ahead in new product development, so that marketing is in the position of choosing, rather than designing," Stoll declared.

With the noise level becoming an increasing factor in the buying public's acceptance of air conditioning, the research done in the ASHRAE laboratory and reported in the paper "Attenuation and Generation of Sound in Elbows with Turning Vanes," presented by W. F. Kerka, staff research engineer, drew special attention.

Principal point made in the research is that the fan in an air conditioning system is thought of as a primary source

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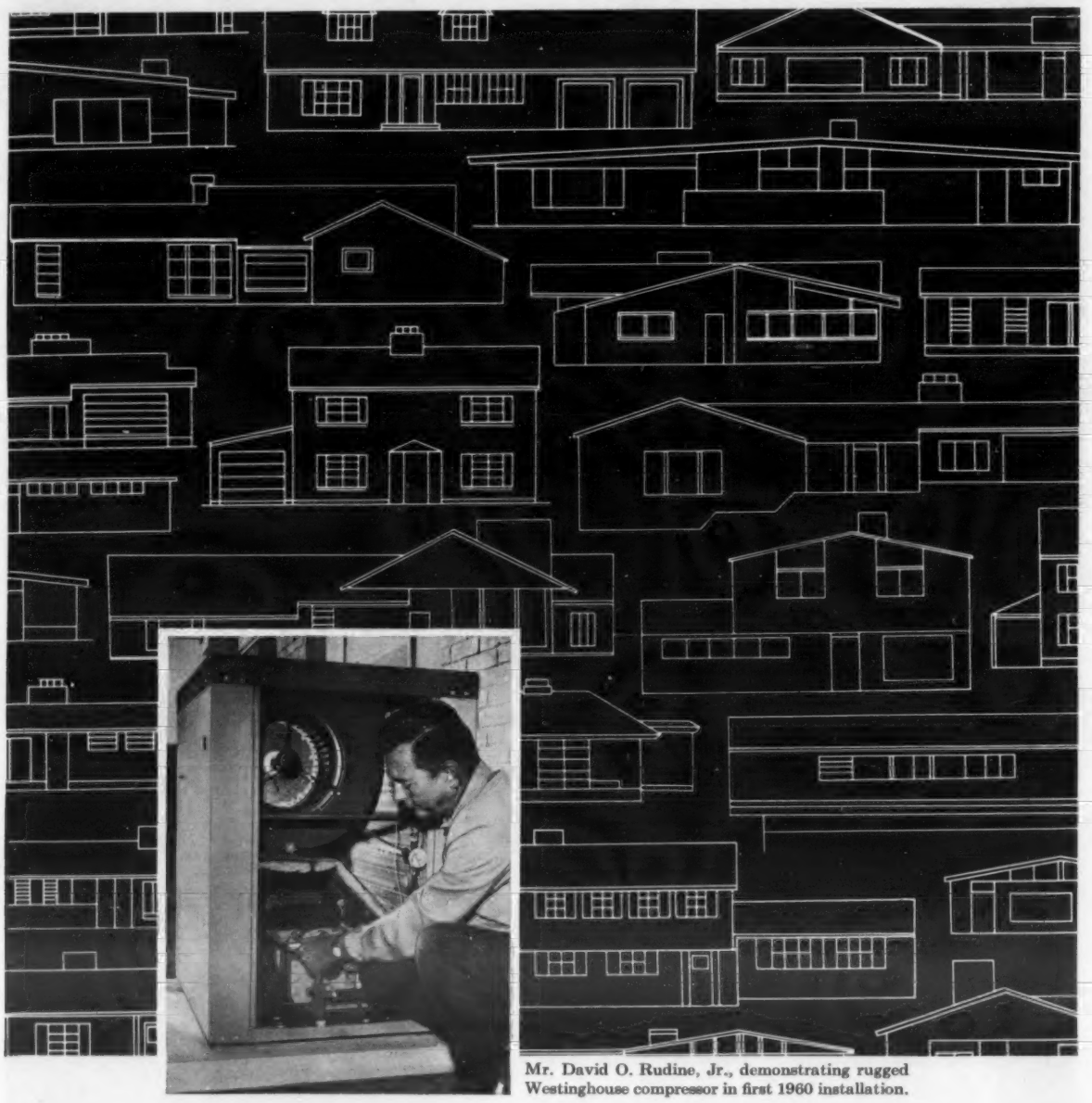

Mr. David O. Rudine, Jr., demonstrating rugged Westinghouse compressor in first 1960 installation.

Over 500 Westinghouse installations without a single compressor failure

Impressive? Yes! But not surprising. Westinghouse builds them that way . . . Westinghouse specialists install them that way.

In two years with over 500 residential installations, Southwest Heating & Cooling Service in Houston hasn't had one compressor failure.

"This is when Westinghouse quality pays off," says Dave Rudine, manager of the company that compiled this fabulous record.

Westinghouse q|s|p* air conditioning products are designed, engineered and built to give the quality, service and performance demanded by the real professionals in this industry. On your next air conditioning requirement—packaged or applied—better call Westinghouse. J-85032

* q|s|p – quality, service, performance

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV ALTERNATE FRIDAYS

Air Conditioning Division
Westinghouse Electric Corporation
Staunton, Virginia

York Customers' Forum

Consulting Engineer, Mech. Contractor Discuss Relationship with Manufacturer

YORK, Pa.—One of the leading consulting engineers in the country joined with a prominent mechanical contractor as the guest panel for the first Customers' Forum of 1960 at the York Div. of Borg-Warner Corp.

Richard T. Baum, Jr., a partner in Jaros, Baum & Bolles, Inc., New York consulting engineer specializing in air conditioning, and Lewis L. Pierce, executive vice president of William H. Singleton Co., Springfield, Va., mechanical contractor, discussed the relationship of their professions with the manufacturer of air conditioning.

Baum told the 126 representatives of management, marketing, engineering, and manufacturing that consulting engineers wanted complete and accurate details on engineering performance, price structure, and space requirements. He credited York with doing an excellent job in this respect as far as his company was concerned.

He said that it is particularly important for manufacturers to have field forces qualified to solve any problems that may arise and give guidance to a contractor who may not have broad experience with the equipment being installed.

Calling for a thorough exchange of information, Baum said that the architect, engineer, mechanical contractor, and manufacturer are basically members of one team dedicated to building a building.

The best job, from exeryone's point of view including the owner, is usually the one in which everyone makes a reasonable profit, the consultant declared.

Pierce listed a number of areas in which manufacturers could be more helpful to the mechanical contractor and assist in his struggle to keep prices down and quality up.

He called for more simplified quotations with manufacturers accepting their fair share of responsibility; rigid compliance with delivery dates; streamlined methods of paper work; starting the contract warranty period at the time the system is placed in acceptable operation; and the formulation of an adequate standard of noise levels.

During the discussion period, Baum asked manufacturers and engineers to cooperate in finding an approach that would help hold down the mounting cost of controls, as well as setting "realistic" prices for this part of the job.

He termed the increasing complexity of control systems "a serious problem" and said that a simplification of such systems was a "must" for the good of the entire industry.

The next three meetings on the 1960 schedule have been tentatively set to cover the customer's viewpoint on packaged products, gas applications, and apartment houses.

Arkla Schedules Service Training, Product Sales, Application Courses

LITTLE ROCK, Ark.—Arkla Air Conditioning Corp. announced plans for 11 service training schools on its "Sun Valley" gas air conditioning units, four on its water chiller equipment, and three product and sales schools on each, and a special application engineering course during 1960.

The Sun Valley and chiller service courses will be held at Arkla's Evansville, Ind. factory, while the product and sales schools will be conducted at its Little Rock, Ark. sales headquarters. Schools will range from three to five days in length.

The schedule of Sun Valley equipment service training schools is as follows:

Feb. 15-19; Feb. 29-March 4; March 21-25; April 4-8; April 25-29; May 16-20; Sept. 26-30; Oct. 10-14; Oct. 31-Nov. 4; Nov. 14-18; and Dec. 12-16.

Water chiller service schools will be held March 7-11, May 2-6, Oct. 17-21, and Dec. 5-9.

Sun Valley product and sales schools are scheduled at Little Rock April 11-14, May 23-27, and Dec. 12-16. Similar sessions on water chillers will be conducted March 14-16, May 9-11, and Nov. 7-9.

In addition, the company will hold a special air conditioning application engineering school—covering such subjects as psychrometry, coil selection, pipe sizing, load calculation, and equipment selection—at Little Rock Feb. 22-26.

Russ Brown, Arkla's manager of heating and air conditioning products, said applications for the service schools should be made to The Service Training Dept., Arkla Air Conditioning Corp., Evansville 7, Ind., and be received at least ten working days before each session.

Classes in March, May, October, and December are scheduled so that a student may attend both Sun Valley and chiller service schools by remaining in Evansville over a weekend. Several of the product and sales schools this year also are so arranged that they either precede or follow service schools.

Applications for the product and sales schools or the special February application engineering course, all to be limited to a maximum of 35 students, should be made to The Sales Training Dept., Arkla Air Conditioning Corp., 812 Main St., Little Rock, Ark.

FOREMAN COOLING ASSEMBLY

An Ohio manufacturer with an aggressive future program in the residential summer air conditioning field has an immediate opening for an experienced supervisor. Should have experience in the manufacture and repair of cooling circuits. Send detailed resume and salary requirements to BOX A6469, Air Conditioning, Heating & Refrigeration News.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

LOW-COST, EASY TO INSTALL, EASY TO SERVICE LINE

by Tenney

for Back Bars, Reach-Ins,
Direct-Draw Bars,
Under-Counters, Low Boys

all-aluminum mx unit coolers

- RUSTPROOF, LIGHTWEIGHT ALUMINUM CASE
- COIL CONSTRUCTION completely non-ferrous
- MINIMUM PRESSURE DROP CIRCUITING, conservative ratings
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- EASY TO INSTALL, keyhole slotted hangers on unit
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- QUIET, EFFICIENT fan and motor combinations
- LIFE LUBRICATED standard motors; easily replaced in field

Write for Bulletin 118-58

Engineers and Manufacturers of Refrigeration and Environmental Equipment

Tenney ENGINEERING, INC.

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Cory-Mitchell Suit Findings--

(Continued from page 1)

the plaintiff to purchase their stock and succeeded in doing so."

Liabilities allegedly not indicated at the time of the sale included a $1 million Federal excise tax liability, an $850,000 Federal income tax deficiency, and reserves for product warranty liabilities.

The Court noted that the record in the case consists of an excess of 6,000 pages and of more than 200 exhibits and includes more than one week of oral arguments.

"In view of the voluminous record," it was stated, "the Court directs counsel for the plaintiff to prepare findings of fact, conclusions of law, and a decree in conformity with the views expressed in this opinion."

The NEWS herewith presents extracts from Judge Sbarbaro's opinion. These findings are of particular interest because of the Court's comments on business practices in general and on warranty matters in particular.

Extracts from Opinions, Findings

"In connection with the excise taxes, the defendants Mitchell and Solomon participated in a conference on the evening of Nov. 6, 1955 and permitted their counsel to represent to the plaintiff that the Mitchell company had obtained a ruling from the Bureau of Internal Revenue to the effect that the ¾-hp. air conditioner, manufactured by the Mitchell company, and its subsidiary [Pearce Products], was not subject to the manufacturer's excise tax.

"At this time, the Court finds that counsel for the Mitchell company and for the defendants in the negotiations for the sale of the stock, in good faith believed this to be true, as did the company's auditor, who also participated in the conference. In truth, this ruling had been withdrawn by the Bureau in August of 1955, approximately one month after its issuance. . . .

"Thus on the evening of the transaction, the defendants, Mitchell & Solomon, chose to stand mute while their representatives unwittingly asserted that a contingent liability of approximately $1,000,000 had been wiped out by the Government ruling, knowing full well not only that the ruling had been withdrawn, but that a Government excise tax agent was preparing a report for a $1,000,000 deficiency. . . .

"The Court finds: The defendants liable for all amounts of Federal excise taxes, together with accrued interest thereon that plaintiff shall be required to pay for the period prior to Nov. 7, 1955.

"In the event, as a result of the decision of the Supreme Court of the United States in the litigation now pending with respect to the excise taxes, the plaintiff makes refunds to customers for amounts collected by the Mitchell company, or Pearce, as excise taxes for the period prior to Nov. 7, 1955, or in the event the plaintiff shall become otherwise liable for such collections either to customers or to the Government of the United States, the Court finds that the defendants shall be liable for all of such amounts, together with any interest legally applicable thereto.

Warranty Responsibility 'Fraudulently Concealed'

"The Court further finds that the defendants fraudulently concealed material information with respect to the company's liability for product warranty.

"In the manufacture of the 1954 line of air conditioners, which began in the fall of 1953, the Mitchell company decided to modify its practice of using steel coils and substituted aluminum in at least 40,000 air conditioners.

"This decision proved disastrous and the company was required to make good on its written warranty. . . .

"In the fiscal year ending June 30, 1955, the company had expended $495,144.37 on account of product warranty expenses. Without attempting to detail the reserves for product warranty liability as set forth in the certified statement of June 30, 1955 prepared by Louis Samels & Co. and the balance sheet of Aug. 31, 1955 attached to the contract, based upon the evidence the Court finds that these reserves had in truth been completely used up by Nov. 7, 1955.

"The Court further finds that the plaintiff has thus far expended on account of product warranties, applicable to air conditioners sold prior to Nov. 7, 1955 the sum of $646,370.83, after credits for recoveries from suppliers and it is to be noted that the liability of the plaintiff for product warranties, applicable to the period prior to Nov. 7, 1955, does not expire until approximately Nov. 7, 1960.

Plaintiff Questioned Adequacy of Reserves

"The evidence shows that the plaintiff questioned the adequacy of the reserves for product warranty liabilities, but that the defendants consistently maintained that the reserve was adequate and that the trouble with the 1954 unit was past.

"The Court finds that the defendants' fraudulent intent is conclusively established by a projection of product warranty liabilities which was prepared about Nov. 1, 1955 by the defendant, Bernard Mitchell, president and active head of the business, and by Charles J. Schroeder, the company's secretary and service manager.

"This document contains in the defendant Bernard Mitchell's own handwriting, a projection of product warranty liabilities for the period from 1956 to 1959 of $624,525. It must be emphasized that this computation was for costs incurred at the regional service depot level only and did not include very substantial sums incurred in parts and work at the factory level."

After citing Bernard Mitchell's testimony that "I never made a computation of the projected product warranty liability. I wouldn't know how to go about that," the opinion continued:

"This testimony is not only inherently impossible of belief, its falsity is demonstrated beyond all doubt by the defendant's acknowledgement that the projected liability for 1956 through 1959 was in his own handwriting.

"Thus, beyond controversy, the record establishes that the defendant, Bernard Mitchell, knew prior to Nov. 7, 1955 that the reserves for product warranty liabilities in June 30, 1955 statement and in the Aug. 31, 1955 balance sheet were grossly inadequate and misleading.

Attorneys, Auditors Were Not Shown Data

"The defendant, Bernard Mitchell, admitted that he did not show his computation of the projected product warranty liabilities to either his attorneys or to his auditor. In the light of this evidence, it is difficult to understand how the defendants can seriously persist in their protestations of innocence and honest purpose. On the record in this case proof of fraud is clearly established by the defendant's own admissions and confessions.

"The Court finds the defendants liable for the plaintiff's product warranty expenses in excess of any reserves on the company's books of Nov. 7, 1955, less any recoveries from manufacturers or suppliers for any defective parts or materials. . . ."

Regarding the arguments on whether or not Mitchell Mfg.'s books and records were maintained

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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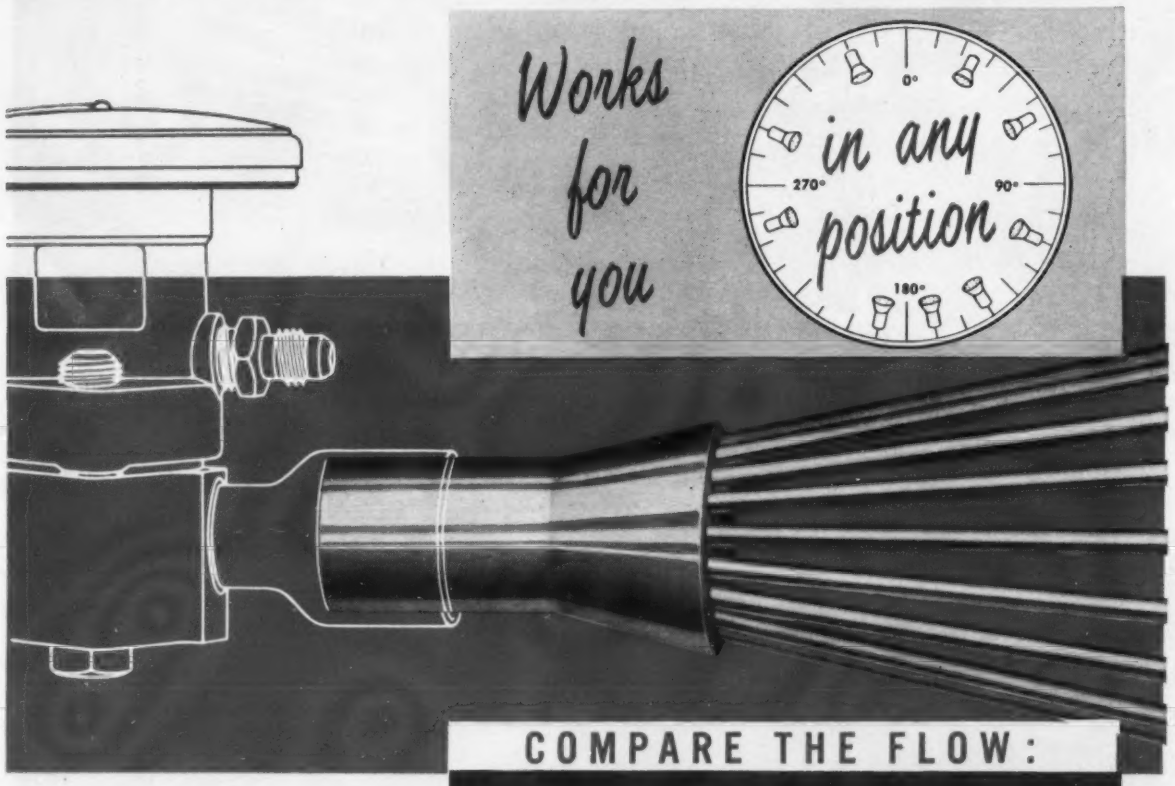
ALCO'S NEW VENTURI-FLO® DISTRIBUTOR



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LOW PRESSURE DROP—permits closer, more economical Thermo® Valve sizing—assures more stable valve control.

ONE PIECE CONSTRUCTION—nothing to come apart, nothing to take apart—*No orifices, plates or nozzles needed* for capacity regulation.

COMPARE THE FLOW:

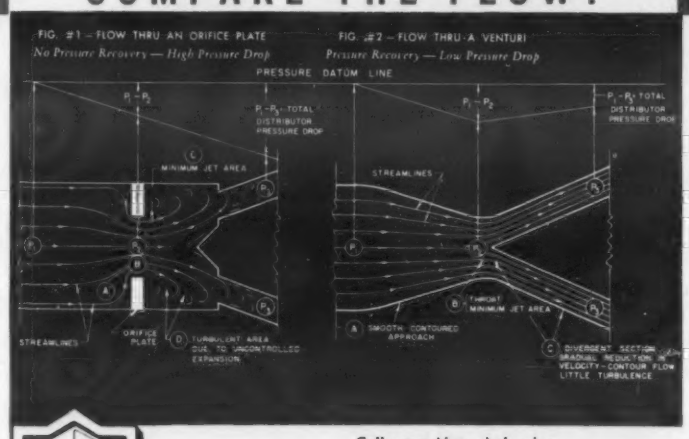
FIG. #1 – FLOW THRU AN ORIFICE PLATE
No Pressure Recovery — High Pressure Drop
FIG. #2 – FLOW THRU A VENTURI
Pressure Recovery — Low Pressure Drop
PRESSURE DATUM LINE
STREAMLINES
ORIFICE PLATE
MINIMUM JET AREA
THROAT MINIMUM JET AREA
SMOOTH CONTOURED APPROACH
TURBULENT AREA DUE TO UNCONTROLLED EXPANSION
DIVERGENT SECTION GRADUAL REDUCTION IN VELOCITY – CONTOUR FLOW LITTLE TURBULENCE

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with good accounting principles, the Court stated, in part:

"In the Court's view what is required by good accounting practices is an honest and diligent effort in the keeping of books and records and in the preparation of financial statements to fairly reflect the financial condition of the company involved.

"To argue that a company statement can show a net worth in accordance with good accounting practices of approximately $2,200,000 and at the same time have undisclosed liabilities of approximately the same amount is nothing less than a contradiction in terms.

"To argue that a company statement which shows a substantial profit from operations, is prepared in accordance with good accounting principles and when effect is given to undisclosed liabilities, substantial losses result instead is likewise a contradiction in terms.

"Accountants and bookkeepers, of necessity, must be allowed some reasonable margin of error, but to contend, as the defendants do here, that books that do not disclose, among other things, a contingent liability of approximately $1,000,000 for Federal excise taxes, a product warranty liability of approximately $800,000 and Federal income tax liabilities of approximately $600,000 are nevertheless in conformity with the requirements of good accounting practices, is to endorse a proposition which would becloud the value and reliability of any certified statement.

"The truth is that a certified statement is, and must be, presumed to be a fair and reasonably accurate report. . . ."

Torrington Names Charles Hathaway

TORRINGTON, Conn. — Charles A. Hathaway has been appointed assistant general manager of the Air Impeller Div., The Torrington Mfg. Co.

Hathaway

Reporting dilectly to Andrew Gagarin, president, Hathaway will have overall responsibility for all engineering, sales, and production operations of the Air Impeller Div.

As chief engineer and then director of engineering for the last eight years, Hathaway supervised a four-fold expansion of the engineering department and development of an exceptionally complete proprietary air impeller testing facilities in the industry, including most recently a unique sound laboratory, it was indicated.

Schuch Heads RACCA Of Southern Calif.

LOS ANGELES—The board of directors of the Refrigeration & Air Conditioning Contractors Association of Southern California, Inc. has elected Herbert P. Schuch of Vernon Refrigeration Co. association president for 1960.

Also elected was L. P. Jacobsen of York Corp., vice president. Arch Lang, Western Air and Refrigeration, was reelected secretary-treasurer.

New members of the board of directors include Don Beck of Kilpatrick & Co., Vince Gessel of Temperature Engineering, Austin Hicks of Santa Ana Refrigeration, and Robert Heisler of Key Air Conditioning Co.

Insulating Cooling Systems Is Topic Of Armstrong Film

LANCASTER, Pa. — Latest results of a continuing study into the problems involved in insulating air conditioning systems have been incorporated into a sound, strip film titled "Building Weather" by the Armstrong Cork Co.'s Insulation Div.

The film is a non-commercial, technical presentation covering the development of normal inside design conditions along with a review of many of the problems involved in insulating air conditioning systems, it was explained.

"Building Weather" is available to interested groups by contacting Department BW, Armstrong Cork Co., Lancaster, Pa. It runs about 16 minutes.

Air Conditioning of Hudson Tube Cars Helps Boost Traffic 15% on Some Days

NEW YORK CITY—Air conditioning in the 50 new cars of the Hudson & Manhattan Railway, popularly known as the Hudson Tubes, resulted in "a noticeable increase in traffic, running on some days as high as 15% above corresponding days of the previous summer.

"This is attributed to the riding public's reaction to the air conditioning and smooth riding of the new cars," reported S. V. Smith, Pennsylvania Railroad Co., Philadelphia; W. C. Wheeler, St. Louis (Mo.) Car Co.; and W. H. Wood, General Electric Co., Erie, Pa.

"These are the first 'production-run' cars for rapid transit service to be fully air conditioned and the results obtained in service have been very satisfactory, proving that attractive cars are a factor in attracting riders."

This was observed in a paper, "High-Performance Rapid Transit Cars for the Hudson & Manhattan Railroad," delivered at a symposium during a meeting of the American Institute of Electrical Engineers.

The new cars, seating 44, but with a maximum capacity of 152, replaced 85 cars that had been built in 1911, 1912, and 1927.

One of the innovations that met "with favorable comment and expression of appreciation," they said, is to provide "women only" service in some cars between 7:30 and 9:30 a.m.

Frozen Food Supplies, Equipment Show To Be Mar. 6-10 In Chicago

WASHINGTON, D. C. — The 19th annual Frozen Food Exposition of Supplies & Equipment, held in conjunction with the National Association of Frozen Food Packers' convention, will be staged March 6-10 at the Conrad Hilton hotel in Chicago.

The hours for exhibit this year have been changed slightly. The exposition will formally open Monday, March 7, from 10 a.m. to 12 noon and again from 2 p.m. to 6 p.m. Tuesday, March 8, the exhibit will be open from 12 noon to 6 p.m., and Wednesday, March 9, the hours will be 9 a.m. to 3 p.m.

It was felt these revised hours would give convention delegates more time to spend in the exhibit area.

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COMPACT NEW
Mueller Climatrol
Gas Heat Builder Line
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New Mueller Climatrol 144/145 gas winter air conditioners feature compact, 2-tone design that uses as little floor space as 14¼" x 25⅛". Popular capacities from 65,000 to 125,000 BTU input. Simplified construction for improved air delivery and trouble-free performance. Plus a competitive price — even though the entire line reflects famous Mueller Climatrol quality throughout.

And the new 924 Cooling Coil fits the 145 line like a glove. No overhang at front or rear. Available in 2-, 3-, or 4-ton sizes. Heavy-gauge, thermally-insulated cabinet. Improved condensate collection with copper-tubing drain. Copper-tube "A"-type cooling coil for minimum static resistance, maximum dehumidification, and uniform air flow. See your Mueller Climatrol representative or write direct for additional information.

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Rheem Adds Air-Cooled Residential Air Conditioning Models for 1960

CHICAGO — As a companion to its "Rheemaire" lines of residential and light commercial air conditioning, a new line of air-cooled equipment is being added for 1960, it has been announced by the Home Products Div. of Rheem Mfg. Co.

Division executives said the addition to the air conditioning line has been made possible by rapid acceptance of Rheemaire since its introduction four years ago.

While no figures on Rheemaire were disclosed, it was announced 1959 sales were more than double those of 1958.

The new lines of air-cooled equipment, to be known as "Corsaire," are manufactured in the Rheemaire production facilities in the Rheem Chicago plant, and are being provided in both self-contained and remote condensing unit styles.

Expected To Make Specific Appeal In Cooler Areas

The Corsaire units are expected to find acceptance in the new residential construction market, it was indicated. In addition, Rheem Corsaire equipment is expected to have specific appeal to homeowners in cooler climates where air conditioning is needed only for a relatively brief period during the summer cooling season, the division pointed out.

Seven remote condensing unit models are being offered, in four capacity sizes: 23,000, 34,000, 46,000, and 57,000 B.t.u.h.

The remote Corsaire system features service valves, moisture indicator, condenser guard, year-round thermostat, two-speed fan control panel, quiet propeller fan, and permanent-split capacitor fan motor as standard equipment, it was stated. The remote Corsaire is said to be among the most easily serviced condensing units, with all controls and valves readily accessible to the serviceman.

Cooling coils built by Rheem for use with the remote Corsaire include coils for upflow, downflow, horizontal flow and blower-coil units for commercial use. All coils are designed to fit standard Rheemaire plenum cabinets and applicable Rheem furnaces.

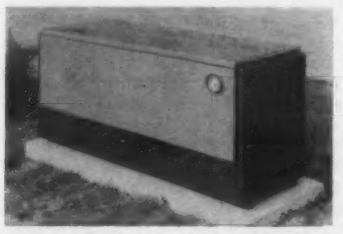
Self-contained Corsaire units are available in 22,000 and 33,000 B.t.u.h. capacities, and are designed for use where a cooling system independent of the heating system is desired. Installations include rooftop, attic, crawl space, and through-the-wall use.

Following the distribution pattern of Rheemaire, the Corsaire will be distributed through Rheem heating and air conditioning wholesalers. Shipments are being started during the first quarter of 1960.

Other Products

The Home Products Div. also announced that new model Rheemaire units in 2, 2½, and 3½-ton residential sizes feature appliance styling, with removable side panels. Finished in two-tone green enamel, the Rheemaire has a low silhouette.

Also being offered are "Rheemglas" highboy and lowboy furnaces. They have "high-style" front panels, featuring two tones of blue with contrasting trim of embossed gold.



RHEEMAIRE units in 2, 2½, and 3½-ton residential sizes feature new appliance styling, with new removable side panels. Finished in two-tone green enamel, the Rheemaire provides a low silhouette that may easily be shrubbed out of sight if desired.

CORSAIRE central air conditioning for residential and light commercial use, featuring an air-cooled condenser, is being introduced as a companion to the well-known Rheemaire central air conditioning line. Seven remote condensing unit models are available in capacities of 23,000, 34,000, 46,000, and 57,000 B.t.u. per hour.

A conversion plenum, for the addition of Rheemaire central summer air conditioning, can be installed with the furnace. The entire line of Rheemglas furnaces is specially designed to accommodate air conditioning.

Either with or without the addition of air conditioning, the Rheemglas furnaces accommodate the Rheem "Auto-Zone" System. This is a packaged two-zone control system which uses two thermostats, one mounted in each zone.

Heart of the Auto-Zone system is a packaged two-zone damper assembly, featuring multi-blade dampers for each zone, actuated by a damper motor mounted directly on the damper casing. With all damper linkages factory assembled, the system is ready to install in the conditioned air stream from any Rheem furnace or Rheemaire central air conditioner.

With a starting point of 80,000 B.t.u. for the highboy and 100,000 for the lowboy, Rheemglas furnaces are supplied in increments of 20,000 B.t.u. up to 160,000.

Equipment for Homes With Hydronic Heat

For homes with hot water or "hydronic" heat, Rheem air handler units are available. The air handler is complete with cooling coil, blower, and filters.

Another Rheem product is a packaged gas-fired boiler for hydronic heating systems. The boiler is delivered to the installation location with all components assembled, connected, tested, and enclosed in an appliance-styled jacket 15½ in. wide and 39 in. high. Depth, depending on size in B.t.u. output, varies from 29 to 36 in. Circulating pump is mounted in an accessible position on the back of the unit.

The boiler is available in four sizes, ranging in I.B.R. B.t.u. output from 46,500 to 113,300. In addition, it is available in knock-down units of I.B.R. B.t.u. output ratings of 46,500 to 180,000.

WORTH MORE BECAUSE THEY WORK MORE!

New Chevy pickups pay off in new ways

Chevy's new way with work makes short work of meanest hauling jobs – gets them out of the way faster and easier, more economically and profitably. Pick the pickup that suits your needs from Chevy's big 11-model lineup that includes stylish Fleetsides, handy Stepsides and new lower priced 4-Wheel-Drive models.

The trim, low lines of Chevy's 1960 pickups only hint at the tremendous difference in store for you. Their totally new chassis design is engineered from the road up to deliver payload performance like you've never known before. For example, Chevrolet's new torsion-spring independent front suspension and new frictionless rear coil springs give you the smoothest truck ride you've ever experienced whether loaded down or running empty.

And the new drop-center frame construction *lowers Chevrolet's over-all height*. This results in easier cargo handling, easier cab entry and exit. And it means a lower center of gravity which, teamed up with Chevy's advanced suspension, produces new stability on the road. There's new sure, easy handling that pays off in higher safe speeds, shorter trip times, more work and more profit per day!

All this and much more – including the latest in economical V8 or 6-cylinder power and totally new cab comfort – is yours in a '60 Chevy pickup. Find out for yourself the difference Chevy's advanced design can make. Get full details from your local Chevrolet dealer. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

Business Policy

Ideal, Principle, and Purpose Are Elements Which Serve as Rudder In Attaining Goals

ATLANTIC CITY, N. J.—Ask the average businessman if his concern has a set of policies by which the business is directed and controlled and he will reply that of course he has.

But ask him to state what they are, and you will see him begin to flounder and sputter.

Yet the business that is run these days without a set of policies to govern it is like running a ship without a rudder, Milton I. Schwartz, president of S. & M. Schwartz & Co., New York City, told the National Commercial Refrigerator Sales Association at its annual convention here.

Schwartz is immediate past president of the organization.

"Today," Schwartz declared, "the success of any business enterprise depends largely upon the ability of its management to stabilize costs and selling prices and to keep quality and service unimpaired, because doing business is so complex an undertaking there must be some force to steady it.

Specific Goals Vital To Success

"We never can arrive anywhere unless we set up our goals and keep going toward them. We need standards to guide us, lines of conduct to follow, so that business development will be a matter of knowledge, rather than guesswork.

"We must have sound, stable policies and pause a little and think it out before we change."

Schwartz then elaborated on this idea and explained what policies and guiding principles were set up for his company.

He continues:

Our policy, therefore, should be a guiding principle of our business organization. It should designate the aims of the business and the approximate methods to be used in accomplishing them.

Policies should be the foundation, the brick and mortar upon which our business is set up.

Policies Set Up and Limit Field of Operation

Selecting and formulating our policies provide us with a set of restraints. Policies set up and limit the field of operation. They outline the course which an analysis of conditions has shown to be the best one to follow.

Remember, I said, "outline," not "rules." The policies of an organization cannot be expected to provide a ready-made answer to every problem that arises. They do, however, provide the formulas by which the solutions to problems may be worked out.

Conditions constantly are changing, and new problems are constantly arising which could not possibly have been foreseen.

For this reason policies must not be too detailed as to the methods, lest they become too inflexible and not readily adjustable. At the same time they must be not so general as to become hazy and not understandable. They have to be clear and concise, and the goal to be reached should be known to all.

3 Elements of Policies

The general policies of the business is made up of three elements, the ideal, the principle, and the purpose.

The ideal must be substantial. It must be in keeping with economic and social conditions. It must be capable of being worked out on a basis of facts. And it must be in accord with sound business judgment.

Our ideals, our big thought, our big dream in our company is to manufacture or distribute and install and service all equipment that goes in every store, or establishment, of a shopping center.

We do not deal with an establishment that cannot go into a shopping center. We do not sell office equipment. We do not air condition homes. We do not sell hospitals. We do not sell ships. We stick to our policies. We belong in shopping centers, that's where we do business.

The principles of our business are expressed clearly and publicly so that our customers and our employes know them. Our firm holds to our ideal. We have a definite objective and we try always to reach it.

We guarantee at any cost anything we sell. We keep out of avoidable debt for capital purposes. We let the business, if possible, build itself, and save money rather than borrow it. We make the highest grade of product before attempting a lower grade, and we cultivate the quality as well as the markets in which we sell. We avoid over-organization.

A definite outline of plans for the future should be contained in the general policy of any business. General policies must be clear, with no ambiguity, and must set forth these facts:

What the business intends to do, what product is to be produced or handled, what markets are to be operated in, what is the class of people to be dealt with, whether the business is to be speculative or conservative.

To sum up, a statement of the general policies should show exactly what the business should be doing at any time.

No matter what your policies are, they should be definite. They should be so clearly formulated that it is possible to place them on record.

Cardinal Principles

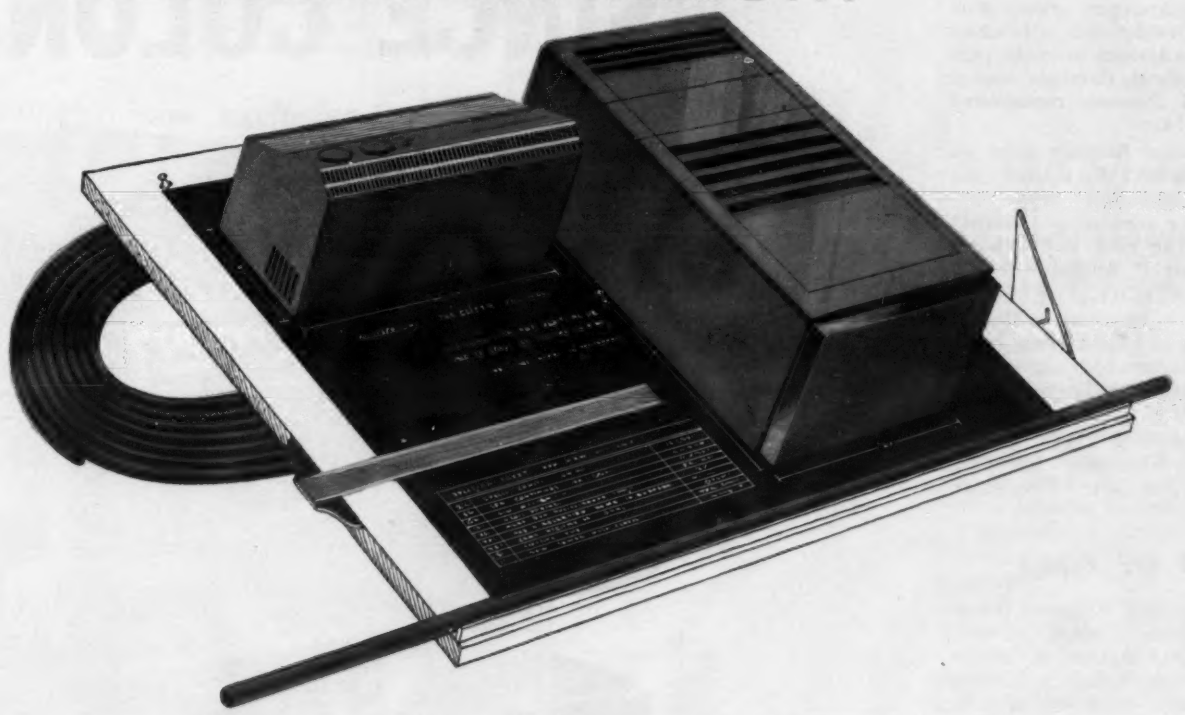
Let these be cardinal principles of your business.

1) Do not change your fundamental general policy so long as you remain in the same line of business.

2) Do not alter the major policy unless changing economic or social conditions, or the modification of the business make alteration absolutely necessary, and then on only the most thorough investigation.

In that way you will keep your business on a course towards success. Hold the rudder steady, and good luck.

For your REFRIGERATION, AIR CONDITIONING and HEATING UNIT NEEDS . . .



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Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

newsworthy utterances, and a talent for obtaining front-page headlines by the dramatic things he does and says.

He has immense personal charm, he "projects" his inner sincerity *into* audiences when he's on a platform, and:

He is utterly, even naively, idealistic and honest.

George Romney's commercial success—and the resurgence of American Motors—have hinged upon those qualities.

Competitors under-estimated him from the start. But now they appreciate and admire him inordinately. So does the general public.

Business Evangelist

Take the "compact auto." Our old friend George Mason sensed the need for it, supervised its design, and created facilities for its production.

Mason, however, didn't succeed in selling this utilitarian concept to dealers, or to the public. The short Rambler was a flop until Romney evangelized THE IDEA.

Spellbinder Romney went on a speaking tour. He scalted "gas guzzling dinosaurs" while promoting the idea of a Compact Car, and he *sold* The General Public that it needed what he offered.

Result: American Motors stock shares leaped from 10 to 90. A business which almost was out of business became real healthy all of a sudden.

And the "Big Three" in the automobile business belatedly followed suit with "compact" cars.

Political Sex Appeal

This Romney, a decent fellow who "projects outward" so well, is a natural statesman, rather than a wishy-washy politician, or a stuffy, mentally muscle-bound corporation tycoon.

He has IDEAS and CONVICTIONS, plus the inherent personal qualities needed to SELL them.

His personal charm, moreover, is so wondrous that probably he could be elected to any office — despite party machine opposition (which, no doubt, he will encounter).

As a Senator, if we can judge from his past record, he probably would be what "machine politicians" detest — an unpredictable maverick who would vote his own convictions, and then submit his record to the people.

Whether such a man can win either nomination or election in Michigan — which is torn by equally powerful and completely antagonistic interests in both parties—we do not know.

We feel sure, however, that George Romney could invigorate the political scene. We hope he is persuaded to make a run for the Senate.

Or, how about Vice President? He'd make an excellent running mate for Nixon—who *does not* "project" well. (Nixon is cold; Romney warm. Both have demonstrated ability and integrity).

The Human Side of an Extraordinary Man

Conveniently, at this moment, "Dope" has received a pre-publication review copy of a book entitled:

The Story of George Romney —Builder, Salesman, Crusader.

"Dope" read this book last night. It supports his feeling that Romney is:

(a) *Extraordinarily lucky* (that's good, because America's greatest Presidents — Washington, Jefferson, Lincoln, Roosevelt, Eisenhower — were exceptionally lucky, too).

(b) *Remarkably innocent and even naive* (good, also, because the innocent and the naive people retain their ideals).

(c) *A Great Salesman* (chief attribute for any executive) and a *Religious Man.*

Romney's religious zeal — he was a Mormon missionary as a young man — has given him moral courage, plus invaluable training as a speaker and debater.

From this evangelistic background stems his belief that the majority isn't always right, that the biggest companies aren't (by definition) the soundest, nor the richest entities invariably the best.

Mormon belief in self-reliance, and refusals to accept government doles, account for Romney's opposition to federally-supported laziness.

He does not force his religious beliefs on anybody, however.

There are as many coffee machines in American Motors plants as in Chrysler's; and Kelvinator executives who feel like drinking something stronger occasionally, in moments of relaxation, enjoy themselves without feeling guilty.

(Mormons don't even drink coffee or tea).

Nevertheless Romney takes a Bible with him on his travels, and his Faith is no secret.

"My religion is my most precious possession," he declares.

"It teaches me the purpose of life, and answers life's greatest questions: where we come from, why we are here, and where we are going. It provides me with yardsticks for life based on eternal values."

He'd Be No Novice In Washington

Prior to his business career with the Aluminum Corp. of America, the Automobile Manufacturers Association, and American Motors, George Romney apprenticed in Washington, D. C.

He became an eager-beaver personal secretary to Senator David Walsh of Massachusetts, who was ranking member of the Senate Finance Committee — which dealt with tariffs, taxation, revenues, and budgets.

This was a liberal education in government for fledgling George.

He attended numerous hearings of the Finance Committee and its subcommittees, and finally sat at the side of Senator Walsh on the Senate floor during debates.

While Walsh spoke, Romney passed him notes and papers.

He listened at close range to such inspiringly individualistic orators as Jim Watson of Indiana, David Reed of Pennsylvania, George Norris of Nebraska, and other colorful figures.

Quoting from the biography:

(Concluded on next page)

THE BEST NEWS FOR SINCE COLONEL DRAKE

...featuring a NEW and ultra-modern design

Re-styled and re-engineered to achieve new economy—utter dependability... striking beauty! Here are all the superior advantages of *low pressure* burner operation combined into a vigorous stimulator for oil heating sales.

THE *WINKLER LP** OIL BURNER

LATEST, GREATEST DEVELOPMENT IN ECONOMICAL HOME HEATING

***LOW PRESSURE**

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from preceding page)

"Work on the floor of the U. S. Senate, at the age of 22, was heady adventure.

"Day-to-day tasks of Senator Walsh's office comprised a priceless education in the intricacies of government and the art of winning and keeping friends.

"When the Romneys set up housekeeping in Washington, his talented wife Lenore resumed her acting career by directing plays for student groups at George Washington university and conducting a radio poetry program.

"Lenore chose and read the poems. The relaxed red-haired young man who announced the program was Arthur Godfrey."

Here's What He Stands For

Although he can accept only a small fraction of the speaking invitations which pour into his office, Romney turns up before a wide variety or organizations, large and small — automobile groups, economic association, women's societies, etc.

His messages, which frequently tee off with brief quotations from a wide scattering of authorities . . . Isaiah to George Santayana . . . vary in approach, but invariably come earnestly to grips with the small assortment of public issues that concern him most—anti-trust law, labor law, need for voluntary cooperation, and ridding politics of the dominant and rigid influences of powerful economic groups.

Sample quotations from his speeches:

"We believe no international industrial union organization should have any more authority to direct and control the collective bargaining of unions representing employes of separate employers than the Automotive Council has to direct and control the position of its member companies.

"Neither an international union nor a national trade association is as well qualified as the particular union and employer directly concerned. These are the people who know the specific problems and conditions firsthand."

"The present nature of collective bargining in this country must change, or the United States is going to lose its present world economic position.

"We are in the process of putting American industry on the same sort of economic stilts that we have put American agriculture under as a result of agricultural subsidization. This has lost for us much of our previously large world agricultural market."

In his view, damaging effects of U.S.A. labor laws fall into eight categories: (1) the "fatal conflict" with the anti-trust laws previously mentioned; (2) their premise that collective bargaining must be based on class conflict; (3) the extent to which they have overemphasized areas of labor-management disagreement at the expense of areas in which mutual interest is clearly established; (4) their creation of an "almost total absence of union-management cooperation"; (5) the premise that it is desirable that wages alone should absorb the full national rate of improved productivity; (6) their unsettling influence on buying occasioned by heavy inventory accumulation at times in anticipation of major strikes; (7) their buildup of labor power to the degree that unions are able to saddle industry with excessive costs, and (8) ability to channel this union power into so much political activity that the whole economic system is being perverted "into a primarily political system, and stimulating a dangerous war among economic organizations for political power."

Competition at Its Sharpest

Competition is much touted as the real sparkplug of the America economy. If so, this American Motors genius ought to know plenty about it because, as Romney relates, "few other companies face so many large competitors."

In the automobile industry he is up against General Motors, Ford, Chrysler and, in ever-increasing numbers, foreign invaders.

But that is not all: in the appliance field Kelvinator competes with General Electric, Westinghouse, Frigidaire, Whirlpool (with its RCA and Sears-Roebuck partners), Philco, Admiral, Norge (Borg-Warner), and many others.

Yet George Romney has emerged a winner in competition with all these corporate Goliaths.

Here, we suggest, is a MAN. God bless him! We'll vote for him, and so will loads of other good citizens — if he can be persuaded to run.

OIL HEATING MEN STRUCK OIL

100 years ago near Titusville, Pennsylvania, Colonel Edwin L. Drake drilled the first commercially successful oil well. Oil, as a source of low-cost energy, has since made a tremendous contribution to world progress.

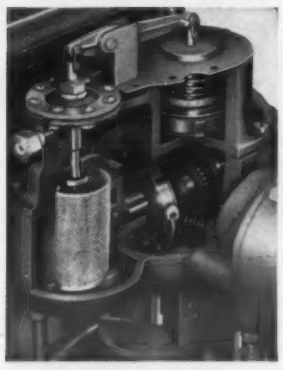
...featuring the HEAT-KEEPER, a new, exclusive fuel saving device

A triumph of creative engineering! In the Heat-Keeper, Stewart-Warner engineers have made a major contribution to more economical heating. *The Heat-Keeper further increases the fuel savings made by the Winkler LP by preventing stand-by heat loss when the burner is off!*

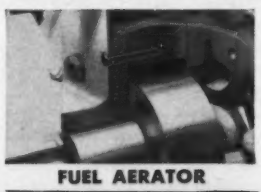
When oil burners of conventional design shut-off, the draft up the chimney continues, pulling cold air into the furnace or boiler and forcing out residual heat.

The Winkler LP Heat-Keeper is in effect an *automatically operated gate!* It opens slowly to the correct air setting for proper combustion when the burner starts and closes when the burner stops. When closed the Heat-Keeper effectively stops the rush of air and seals heat within the boiler or furnace.

Other reasons why the WINKLER LP* saves up to 50% in fuel



FUEL METER



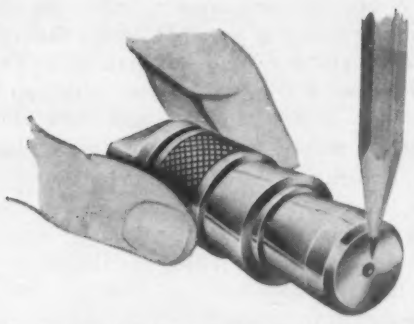
FUEL AERATOR

FLAME CONTROLLER

The positive displacement Fuel Meter controls the firing rate and can be sized to fit the heating load—delivers exactly the fixed amount of oil year after year. The firing rate is not affected by dirt, or oil viscosity.

The Fuel Aerator builds up the proper operating pressure and mixes an exact amount of primary air with an exact amount of oil. Oil-saturated air is then delivered to the nozzle where secondary air is introduced to assure most favorable burning conditions.

The Flame Controller directs secondary air in a correct pattern and produces the proper turbulence to assure complete combustion. Blast tube hood assists in properly directing the air flow.



THE EXCLUSIVE NON-CLOG TURBA NOZZLE —GUARANTEED 10 YEARS

Note the nozzle opening—approximately *30 times larger* than the opening in a conventional high pressure burner. No need to oversize the burner to prevent nozzle clogging.

An oil and air mixture is metered at low pressure to the Turba Nozzle. Oil and air leave the nozzle as a fine, completely burnable mist.

Write for details of Stewart-Warner Direct Factory Franchise

Symbol of SW Excellence

STEWART-WARNER

HEATING AND AIR CONDITIONING DIVISION

Dept. BA-20, Lebanon, Indiana

RSES Chapter In Sacramento Gets Charter

SACRAMENTO, Calif. — Charter for the new Sacramento Chapter of Refrigeration Service Engineers Society was presented to President Roy C. Ayres at a regular meeting Jan. 26 by RSES International Treasurer Charles G. Bell of Fresno.

Membership certificates were presented to the 30 charter members.

John H. Spence of St. Louis, international educational chairman, who had been scheduled to address the new chapter, was unable to do so because of illness.

Bell read a letter from the Air Force recommending RSES membership to its refrigeration and air conditioning mechanics. As a result of the letter several refrigeration and air conditioning mechanics were in attendance from Travis Air Force Base.

Educational Chairman Arthur H. Dietz of Vacaville, who is both refrigeration contractor and electrical contractor, presented facts about electrical service, illustrated with charts, which an informed air conditioning and refrigeration man could use in determining what power service is available for structures.

He also told of characteristics of various electrical circuits and hook-ups, with a warning to be extra careful of 440-volt installations for safety's sake.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

They'll Do It Every Time

by Jimmy Hatlo

NO, NO! GIMME THAT PICK!! LIKE THIS! AN' PUT A LITTLE LIFE IN IT, WILLYA?! IF I CAN DO IT, YOU CAN DO IT!! YA ACT LIKE SLOW-MOTION LAYOFFS!!
YEAH--- HE DOES IT FOR TEN SECONDS AN' HE'S WINDED! WE'RE SUPPOSED TO DO IT FOR EIGHT HOURS---
I'D LIKE TO SHOW HIM HOW TO DO HIS JOB--- FIRST, I'LL GET IN THE BACK SEAT OF HIS LIMO AND PUT MY FEET UP---
IT'S HIS CONSCIENCE BOTHERIN' HIM--- HE'S GOT TO KID HISSELF HE EARNS HIS DOUGH---
THERE BUT FOR NOT MARRYING A POLITICIAN'S DAUGHTER GO I---
WATCHING THE BOSS CONTRACTOR SET A HORRIBLE EXAMPLE---
THANX AND A TIP OF THE HATLO HAT TO HENRY MOSES, 129 N.E. 97TH ST., OKLAHOMA CITY, OKLA.
12-17
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Augenstein's Auguries

PAUL AUGENSTEIN, shrewd and witty President of Chrysler Airtemp, got a few things off his rugged chest not long ago.

He tilted against tired shibboleth quotations (which frequently are heard in committee sessions in which the engineering profession is involved) to rattle a few skeletons and stir a few stumps.

"We don't have time" is an excuse often used for resistance to progress. However, a project with a *challenge* can spur engineers to work overtime, he points out. "Capture their imagination!" he suggests.

"We tried that before" is another easy way to remove a subject from the agenda. Michael Angelo designed a flying machine which didn't work. Later attempts by other aeronauts led to, well . . . American Airlines, KLM, Pan-American, etc.

"'It isn't in the budget' may state a fact, *but budgets are only yesteday's planning,"* prods Mr. Augenstein. (Our advertising salesmen may be quoting this wonderful aphorism).

"Let's shelve it for the time being," is a convenient way to kill a pregnant idea without being charged with its murder.

"It's against our policy" is another substitute for creative thinking.

"It doesn't fit our program" or "it's too radical a change," or "it won't work in our department," involve several other traps which can retard progress.

Good ideas ultimately will be developed by someone some time, however. Patience and imagination are the keys to progress.

"Rome wasn't built in a day," and "never start vast projects with half-vast research."

One of the greatest challenges existing in *all* business today is proffered by the air conditioning industry itself, Mr. Augenstein avers. Total volume produced is large, but so far there's been relatively poor return on investment.

"Profit is almost a nasty word in the air conditioning business," grims Augenstein.

Some of our biggest corporations—notably General Electric and General Motors—apparently have admitted fatigue in attempting to make a profit in the air conditioning industry.

Why does Chrysler doggedly stay in this business?

"Because we stand on the rim of a growth era in it," insists Paul. "Those who survive the competition will reap a fine harvest. That's why I left a comfortable berth in the appliance business, with G-E, to take on these air conditioning headaches."

Most readers realize that we are now starting a third cycle of development in air conditioning. Much profit can be made in all phases of this cycle, we should agree.

A greater awareness of what the public wants and needs is what our industry requires, states Mr. Augenstein. "People don't always know what they want, so they must be tested, sampled, and then *sold,* in order to create demands," he follows-up.

"Saturation of air conditioning is very low. A vast growth and expansion, therefore, is inevitable. By 1963, large increases will be made. By 1970, the industry will be mature and will be looking for new thresholds to cross."

That's laying it on the line!

What Price Money?

THE AMERICAN DOLLAR is worth less than at any time in history.

Within the lifetime of many persons still working, purchasing power of the dollar has dropped from 100 cents to less than 29 cents. Value of savings and pensions and insurance has dropped accordingly.

This is why prices have been pushed up.

This is one reason why taxes keep going up.

This is a fact of life that should be thoroughly understood by every American.

Chief cause of inflation is not hard to identify. It is excessive, deficit spending by the Federal government.

To check this type of spending, Congress should keep the highway program on a pay-as-you-go basis; oppose inflationary increases in wage scales; remove artificial restrictions on the interest rate of government bonds; avoid wasteful defense spending; and eliminate unnecessary (even if desirable) outlays for public works, cities, veterans' benefits, and airport construction.

We *can't* go on spending—and borrowing—more than we earn.

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Trade Mark reg. U.S. Pat. Office; Est. 1928

AIR CONDITIONING HEATING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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AUSTRALIAN NOTES ROOM UNIT MARKET PENETRATION DURING LAST 2 YEARS

Pope Products Limited
Belmore, N.S.W., Australia

Editor:

Australia is commencing a wonderful era in air conditioning. As you know, room conditioners have been manufactured and merchandised here for some four years. However, it is only over the last two years that any sort of market penetration has taken place in this country.

Pope Products Limited recently have introduced the largest range of packaged conditioners ever to be brought into the Australian market.

We would like you to know that your publication has greatly assisted our programme.

C. W. WARD,
Sales Mgr., Air Conditioning

'FORCED HUMIDIFIER' DESIGNATION AIDS UNDERSTANDING

Research Products Corp.
Madison, Wis.

Editor:

We are gratified to see the first of a series of articles in the Jan. 18 issue of AIR CONDITIONING, HEATING & REFRIGERATION NEWS on the subject of "forced humidifiers." We believe the use of this terminology will do a great deal to provide better understanding of the methods of producing humidification.

We also go along on the idea that the three general classifications under this general heading, namely, atomizing, evaporating, and vaporizing, graphically describe the three methods used.

Future articles on this general subject will be of even greater service to the trade, if they cover, as we assume they will, the problem of sizing and capacities required for various sizes and types of buildings. The problems involved are apparently frequently misunderstood and not given close enough study, so your articles should provide a great service to the industry.

A. W. BROWN,
Vice President, Marketing

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To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING, HEATING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on residential, commercial, and industrial air conditioning, heating, and refrigeration for contractors, dealers, consulting engineers, distributors, servicemen, and manufacturers. Read the industry's only newspaper every week—you'll profit by it—only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10 per year.

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AIR-COOLED
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WIRE US COLLECT FOR PROOF

WESTERN UNION

HARRY C. GURNEY, General Sales Manager,
Janitrol Heating and Air Conditioning,
A Division of Midland-Ross Corporation,
Columbus 16, Ohio

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THE PROFIT PARADE IN THE 60'S WILL BE LED BY **JANITROL SELECT DEALERS!**

Paced by the exclusive *Janitrol Select Dealer Plan* that gives you *action* in place of promises... adds vital new depth and dimension to your *Growth and Profit Future!*

check-out the highlights!

1 **The Finest Factory Technical Training Program** in the industry . . . tuition-free for Select Dealers!

2 **Personalized Dealer Management Services** . . . expert guidance in all phases of management, including sales training, recruiting, accounting, advertising, and engineering available to Select Dealers at no cost!

3 **Dealer Information Service** . . . authoritative newsletters, bulletins and periodicals keep Select Dealers up to date on latest developments in equipment, applications, service and merchandising slants!

4 **Regular Regional Meetings** . . . bring Select Dealers and Janitrol personnel together for stimulating discussions of merchandising, management, engineering and other subjects pertinent to dealer growth and profit!

5 **Liberal Dealer Stocking Plans** . . . assure the equipment required by Select Dealers will be on hand when needed.

6 **Free Retail Salesman Training and Aids** . . . Janitrol helps recruit and train salesmen for Select Dealers. Provides proven, sales-clinching presentation manuals for cooling, heating and new home builder selling!

7 **Protected Territories** . . . Select Dealer Franchises in any market area are limited. No "free-wheeling" franchising to choke off profits!

8 **Powerful Planned Co-op Advertising** . . . a year-round program of hard-hitting local level advertising and promotion prepared for you by experts!

9 **Powerful National Advertising** . . . to create demand in your own local market for Janitrol products—back up your sales and promotion activities!

10 **Promotion Package Worth $300.00** . . . for newly franchised Select Dealers. Includes illuminated signs, floor and window displays, colorful literature, demonstration kits, etc.

11 **Yellow Page Telephone Listings** . . . reserved for you, as a Select Dealer, in your own local phone book under the JANITROL headings.

12 **Competitive Pricing** . . . made possible by famous Janitrol advanced engineering and new automated production lines. Puts Select Dealers in the driver's seat with quality at low cost!

13 **The Top Brand Name** . . . Janitrol leadership in design and quality is nationally recognized and acclaimed. Over two million Janitrol units have been sold!

14 **A Great Line . . . A Complete Line** including the all-new 52 Series condensing units!

Now, a cooling line built to bring you new sales and profit opportunities . . . do away with installation and service headaches! The new 52 Series units have larger coils for higher efficiency . . . distinctive, prestige styling . . . sun-shaded coils . . . weather-resistant finish . . . acoustically treated cabinet . . . 100% safety for children and pets. Top exhaust protects nearby plants . . . Full A.R.I. Certification . . . operates with up to 125°F outside temperature!

Other quality products in Janitrol's full line include Oil and Gas-Fired furnaces in horizontal, vertical and counter-flow models . . . plus a special line of competitive equipment built for the high volume, new home market! In cooling, Janitrol covers the residential and commercial markets with economical, self-contained units; add-on, modernization units and a completely new series of air-cooled condensing units. Janitrol Unit heaters, duct furnaces and schoolroom conditioners blanket the industrial heating market with a wide selection of models from 30,000 up to 1,750,000 Btu inputs.

You owe it to yourself to get the full story on Janitrol's full line . . . plus the fabulous Janitrol SELECT DEALER PLAN! WIRE COLLECT RIGHT AWAY!

FOR SOARING PROFITS IN THE SIXTIES, JOIN THE JANITROL SELECT DEALER GROUP! WIRE COLLECT FOR COMPLETE INFORMATION, ABSOLUTELY WITHOUT OBLIGATION...

JANITROL
HEATING AND AIR CONDITIONING
A Division of Midland-Ross Corporation
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Joints Along Bottom Eliminated

Duct Insulation Method Said To Provide Greater Protection Against Condensation by Reducing Longitudinal Seams

TRENTON, N. J.—A method used to insulate the air conditioning ducts at the U. S. Public Health Service hospital, Carville, La., provides greater protection against condensation, according to a project report by Baldwin-Ehret-Hill, Inc. here.

"The usual method of applying insulation to rectangular ducts using rigid or semi-rigid insulation is to apply one or more pieces of insulation to each side of the duct," the report said. "In this way there are at least four longitudinal seams, one at each edge of the duct.

"Each seam represents a potential trouble spot, for no matter how well sealed, a seam offers less resistance to moisture than an uninterrupted vapor barrier. And since condensation forming on the vapor barrier flows down, the seams along the bottom edges present the greatest hazard."

The method used at the Carville hospital eliminates seams along the bottom edges, and reduces the total number of seams over-all, it was pointed out.

Here semi-rigid insulation, a 6-lb. spun mineral wool felt insulation with a factory applied vapor barrier paper, manufactured by Baldwin-Ehret-Hill, was notched to make it bend around the corners of the rectangular ducts so that the longitudinal seams occur at the side of the duct rather than along the edges.

"Since the ducts range in size from 36 in. by 24 in., to 12 in. by 12 in., and the insulation is 48 in. long, the number of longitudinal seams required using this application method ranged from three to one," the B-E-H report said. "Had the usual method been used, four seams would have been required throughout.

"The 1-in. thick, 24-in. wide, and 48-in. long insulation was notched by cutting out a strip of the insulation with a knife, taking care not to perforate the vapor barrier paper on the external face.

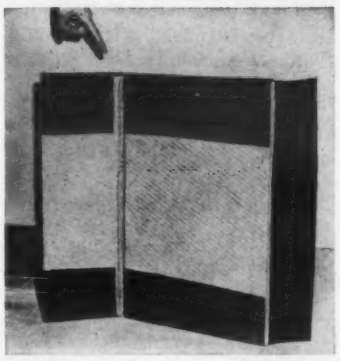
"The notched insulation was wrapped around the ductwork and a mastic tape applied to the seams. Aluminum bands tie the insulation to the ductwork, and an asphalt mastic seals the circumferential joints between the rows of insulations.

"The black Kraft vapor barrier paper over the felts serves to prevent any condensation forming on its exposed surface from reaching the insulation and damaging it or reducing its effectiveness.

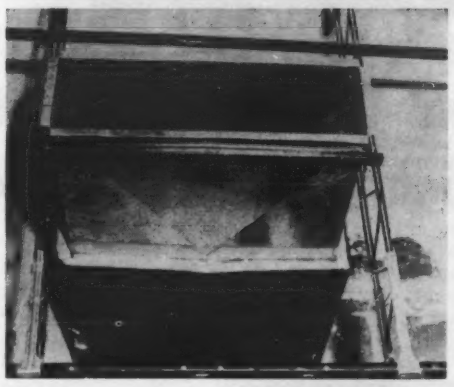
"This is particularly important in a climate such as Carville, La., where the ambient temperature ranges from 85° to 90° F. and the humidity is generally high. Here the temperature of an uninsulated duct would almost always be below the dewpoint of the surrounding air, causing it to drip.

"As applied at Carville a 4-in. wide strip of vapor barrier paper extending out past the insulation overlaps the longitudinal seams, providing increased protection for the insulation against moisture."

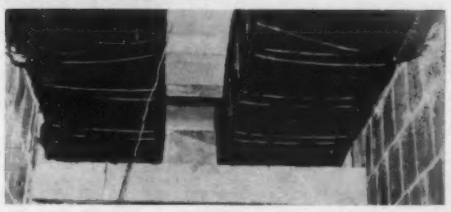
Four floors of air conditioning ductwork were insulated in each of the two hospital buildings by Samdot Insulations, Baton Rouge, La.



FINGER points to notched section of spun felt insulation, which was cut out with a knife. Note exposed strip of vapor barrier paper to the right which will overlap the longitudinal seam of the installed insulation.



NOTE how notched section enables the insulation to be bent around the edges of the ductwork. In this way, the longitudinal seams occur along the side of the ductwork rather than along the edges. Here there is no seam along the bottom corners of duct.



CEILING-HUNG ductwork shows circumferential insulation seams, which are sealed with a mastic. Metal lath was then installed over the insulation and a finishing cement trowelled on over this.

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PERFORATED STRAP
Versatile Hanger Iron

Safely supports hanging pipes, conduits and cables up to 500 lbs. ¾ in. 20 gauge electro-galvanized steel. ¼ in. holes on ½ in. centers. Various lengths available. *Send for literature.*

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The ARI Seal of Certification on unitary equipment is an excellent sales closer. Put it to work for you next time you talk to a prospect.

*"Unitary" air conditioners included in this program: all packaged air conditioners, whether single units or two-piece units (called "split" systems) up to 135,000 Btu per hour in capacity, but not including room air conditioners. ARI Standard 210-58 for electrically-driven equipment; ARI Standard 250-58 for heat-powered equipment.

this seal helps you sell

For free explanatory booklet and Directory of participating manufacturers, write to: Chief Engineer, Dept. A-201, Air-Conditioning and Refrigeration Institute, 1346 Connecticut Avenue, N.W., Washington, D.C.

Field Investigations Show

Electric Heat Points Up Old Problems Of Insulation, Moisture Protection

CLEVELAND—Use of electricity as a fuel for heating re-emphasizes rather than eliminates the old problems of providing adequate insulation and protecting against excessive moisture in and under the structure, according to the National Warm Air Heating & Air Conditioning Association.

The association discusses the subject in some detail in a recent bulletin:

"In a recent investigation of some electrically heated homes in the midwestern part of the United States, the association staff found that electric heating emphasized all of these problems. The basic complaint of the homeowners was operating cost. Thorough investigations showed, however, that improper or ineffectively placed insulation and excessive moisture were the reasons why the operating costs were above those estimated before the systems were installed.

"It is true that an increase in operating cost would have been experienced if other fuels had been used since the causes were constructional in nature rather than being directly attributable to the heating system.

Spots That Are Sometimes Overlooked In Insulating

"Generally speaking, homes which are to be electrically heated are very carefully insulated. Points sometimes forgotten include the insulation of the floors of rooms above attached garages, the insulation of ductwork located in attached garages or in other cold areas, and, sometimes, the installation of perimeter insulation, particularly in crawl space construction. Another spot often missed in crawl space construction is insulating the joist ends above the foundation wall, but beneath the subfloor. This can be quite a source of heat loss.

Moisture Seen as Biggest Single Trouble Source

"The biggest single trouble source, however, seemed to be moisture. In one of the houses investigated, a vapor barrier had been installed. However, no gravel had been used under it. Another problem encountered in this house was that the exterior grade sloped towards the house rather than away from the foundation. As a result of these two things, the crawl spaces had standing water in it.

"Homeowners may not consider this a heating cost problem but the industry knows that if a crawl space underneath a house of 1,050 sq. ft. area has 2 in. of water standing in it, as one of the houses had, the total amount of water in the crawl space will exceed 1,300 gals. To evaporate this amount of water will require approximately 11,840,000 B.t.u. In terms of electricity, this is equal to 3,460 kwh, or, at 1½ cents per kwh, $51.80.

"This is the cost only for removing the liquid water in the crawl space, and makes no provision for other water which may leak in from time to time, nor for drying out the soil under the structure of the house, nor for heating the house itself.

"The wet crawl space seems to have a more immediate effect when an air system is used than when a non-ducted heating system is used in a house. There is a reason for this. With ducts located in the crawl space, as recommended for air systems, the foundation walls of the crawl space are insulated, but there is no insulation in the floor between the crawl space and living areas of the house.

"Obviously, this is done in order to provide the warmest possible floor for most comfortable living. Since the crawl space is not thermally isolated from the rest of the house, the effects of the moisture show up rapidly in terms of increased fuel bills and high humidity with its side effects of condensation, etc., in the living area.

Crawl Space Insulation Was Rotting Away

"The same effect occurs eventually with non-ducted systems. In one of the other houses investigated, the heating cost with a ceiling-panel system (not warm air) seemed to increase sharply after about two years of operation.

"Inspection of the crawl space showed that it was wet, and that the insulation, initially placed between the floor joists, had gotten so soggy that it was dropping away and falling into the crawl space. Without adequate insulation, the heating costs went up.

"Further investigation showed that a few months earlier the homeowner had found it necessary to replace the floor covering in his bathroom. The material was disintegrating, apparently, the owner stated, from moisture which was initially attributed to water having been spilled on the floor, etc. It was found, however, that the situation was much more serious than this, for the plywood subflooring was definitely deteriorating and delaminating. The source of the trouble in the bathroom had actually been the crawl space—moisture from below rather than from above.

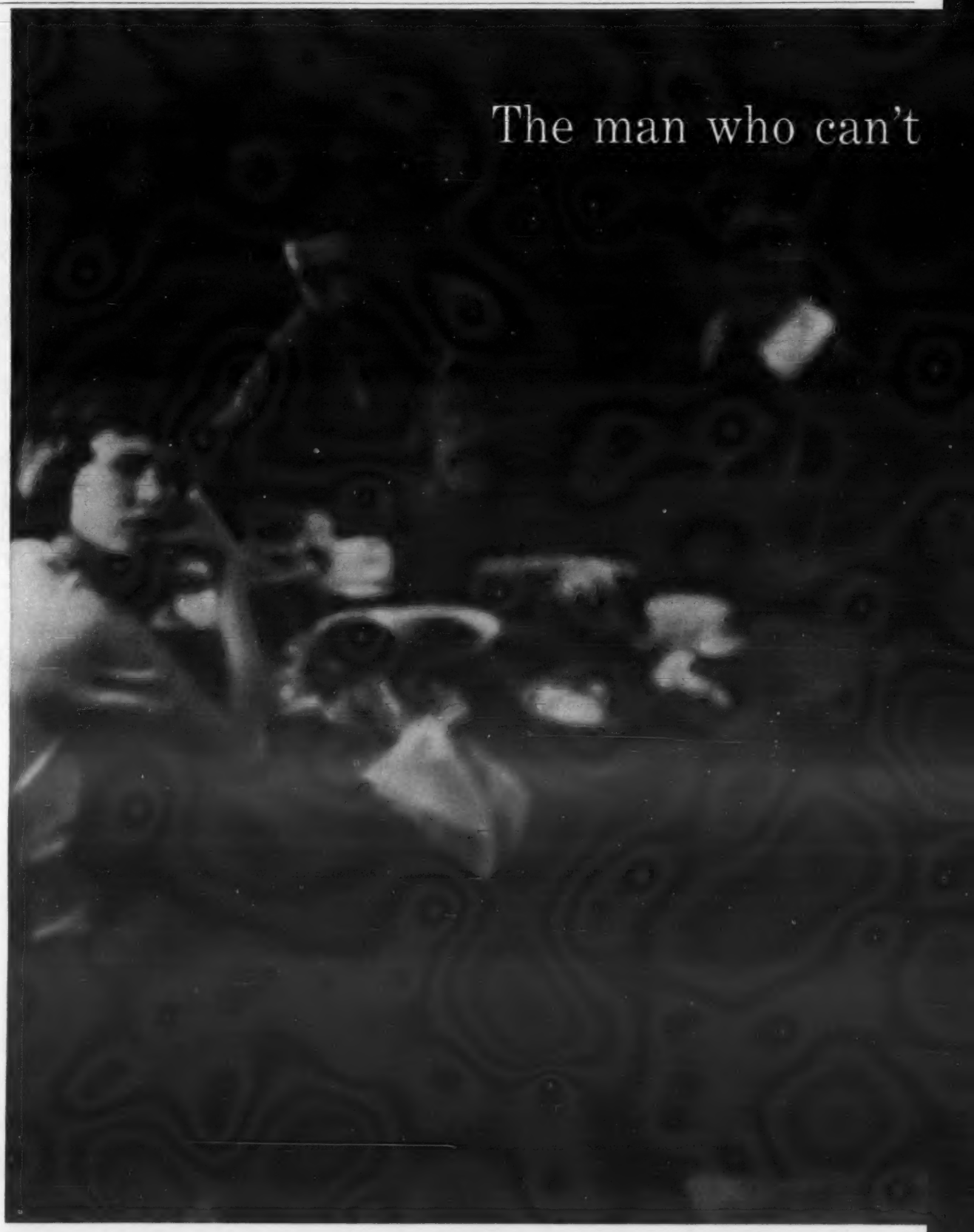
"This situation again indicates the importance of good construction and protection from moisture as shown in Manual 4. The following steps must be followed for both crawl space and slab construction:

"1. The exterior finish grade must be such that drainage is away from the house, rather than toward it.

"2. Effective vapor barriers must be used together with proper coarse fill installed under the vapor barrier.

"3. Footing drains should be used if there is any reason to suspect that either surface or ground water will find its way into the crawl space or underneath the slab.

"4. Perimeter insulation must be used and it should be the type of insulation which will withstand the effects of water and humidity."



Electric Heating Is Topic at Upper Midwest Electrical Meeting

MINNEAPOLIS — Several presentations on electric heating are scheduled for the 23rd annual upper midwest electrical industry convention Feb. 14-17 at the Leamington hotel here.

During a special program for electrical contractors Monday afternoon, Feb. 15, the role of the contractor in promoting, selling, and installing electric home heating will be presented by James V. Gaynor of Gaynor Sales Co., St. Paul.

At the central station conference Tuesday afternoon, Fred Kimball, vice president in charge of sales, Kansas Gas & Electric Co., Wichita, will discuss the importance of electric heating to a utility operation.

Tuesday evening, a meeting on electric home heating will be sponsored by insulation manufacturers.

At this meeting, J. D. Spencer of Wood Conversion Co., St. Paul, will speak on "Planning Home Construction for Electric Heating"; Harold Mattlin, sales promotion manager of Anderson Window Co., Bayport, Minn., will talk on minimizing heat loss through glass and opening areas; and Jack Forciea (Edwards Sales Co. representing Dow Chemical Co.), will submit standards for insulation for electric heating in commercial buildings and multiple dwellings.

A commercial and industrial marketing program will be held Wednesday morning. One of the speakers will be George Jensen, Tem-Trol Corp., Minneapolis, who is to point up the market for climate control in commercial buildings and industrial plants.

Another feature of the convention will be an electric home heating forum Wednesday afternoon.

Lowell Mast of Electromode Corp. will discuss perimeter electric heating; Stanley Aronson, Berko Electric Mfg. Corp., will talk on supplementary electric heating; T. J. Mellon, vice president and general sales manager, Wesix Electric Heater Co., will make a presentation on commercial electric heating; and Carl T. Bremicker, chairman of North Central Electrical League and vice president in charge of sales, Northern States Power Co., will speak on "It's Here—Are You Ready!"

The 10th biennial electrical trade exposition will be held in conjunction with the convention.

750-1,000 Contractors Set To Take PHCIB Selling Fundamentals Course

CHICAGO—"Within the next 60 days, it is expected that from 750 to 1,000 plumbing and heating contractors will be taking the PHCIB training course in Selling Fundamentals for contractors and wholesalers."

This was the message on the progress of the sales training work of the Plumbing-Heating-Cooling Information Bureau brought to the 67th annual convention of the Illinois Association of Plumbing Contractors by Lee Martin, vice president of the bureau.

Martin listed the classes in Selling Fundamentals which are now under way or about to get started in the following places:

Four in Michigan — one in Lansing and three in Grand Rapids; two schools in Dayton; three in Virginia — Arlington, Norfolk, and Richmond; four in Indiana—Indianapolis, Elkhart, South Bend, and Fort Wayne; one in Chicago and one in the Western Chicago suburbs; and one in Baltimore.

Plans are also under way for additional local programs in other areas that have sent representatives to the PHCIB Instructor Training Classes.

Two instructor training classes have been held so far and a third is scheduled for March, Martin said. As a result of these two classes, there are now 31 qualified trainers.

Valley Oil Co. Is First To Receive OHI Certificate

NEW YORK CITY — Valley Oil Co., Middletown, Conn., is the first company in the United States to receive a service certification from the Oil Heat Institute of America, Charles H. Burkhardt, national secretary of the OHI's Distribution Div., reports.

Service certification is awarded by the OHI of America to any heating oil or equipment installation or service company whose servicemen have taken and passed OHI sponsored examinations qualifying them as oil burner service technicians according to standards set by the OHI.

Companies so certified are permitted to display a special seal on their trucks, office windows, etc., stating that their servicemen have been certified by the OHI. Each certified serviceman is given a lapel pin and wallet card.

Five other Connecticut companies have now been certified by the OHI and a certification examination under OHI auspices has been held in Orlando, Fla.

Hajoca Acquires Crane Branch In Trenton, N. J.

ARDMORE, Pa. — Hajoca Corp. announced that it has taken another step forward in its rebuilding program through the acquisition of Crane Co.'s Trenton, N. J. branch.

With the purchase of real estate, inventory, furniture, and equipment, Hajoca will now service the Trenton area with a complete line of Crane valves and fixtures through its branch located at 50 Escher St.

L. J. Bock, a former manager of Crane's Trenton branch and more recently manager of Crane's Philadelphia branch, has been appointed manager. Customary to Hajoca's policy, all former personnel of the Crane branch will be retained by Hajoca, it was noted.

Hajoca now operates 23 branches.

"sandwich" a meal

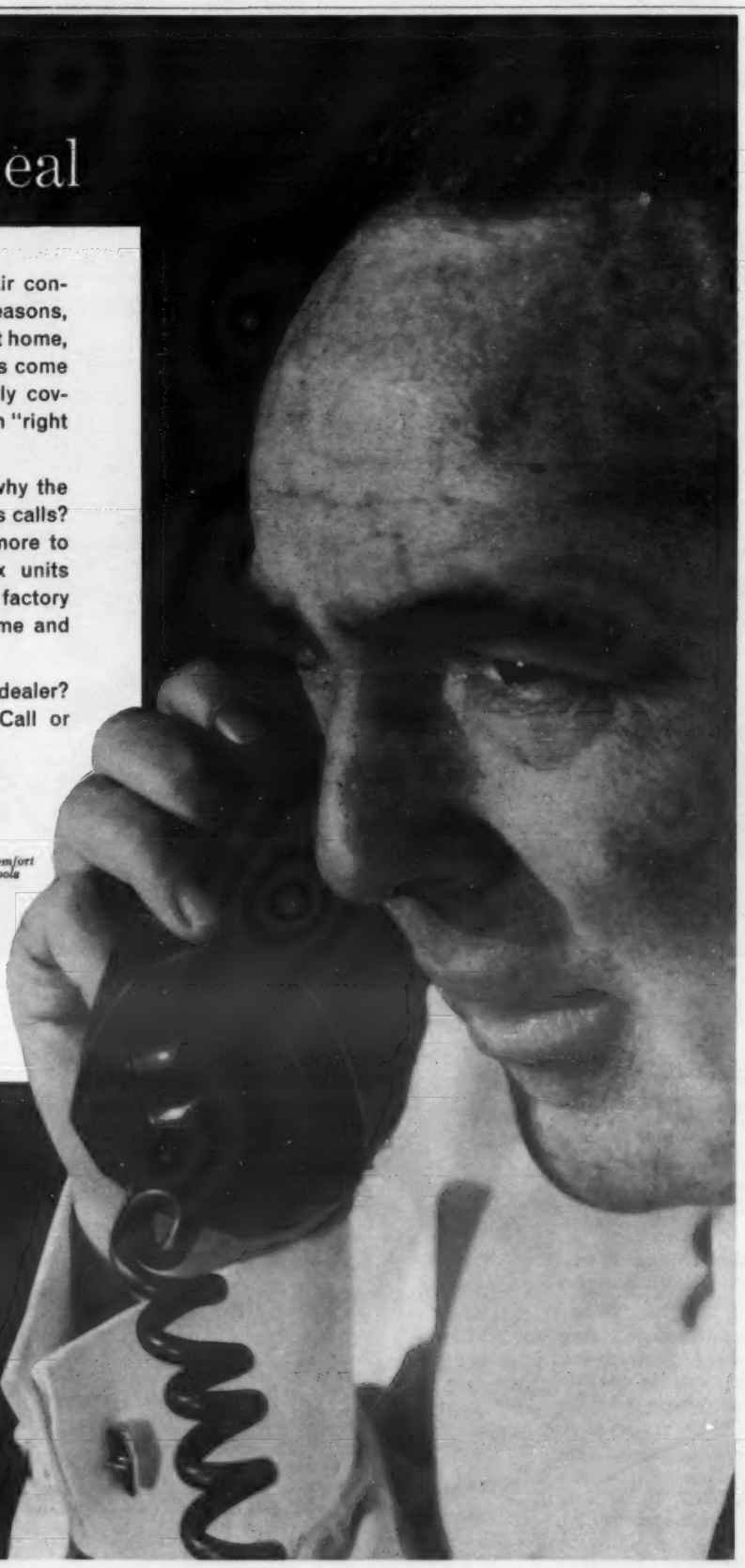
Recognize him? He's the heating and air conditioning dealer. And, during the peak seasons, he's a stranger at his own dinner table. At home, or at the office, somehow the phone calls come in never-ending abundance. He's literally covered with requests for help—ranging from "right away" to "soon as possible."

But have you ever stopped to wonder why the *Lennox* dealer has fewer of those distress calls? It's because the Lennox factory does more to prevent them from happening! Lennox units come completely assembled, pre-tested, factory adjusted—ready to install in minimum time and with fewer call-backs.

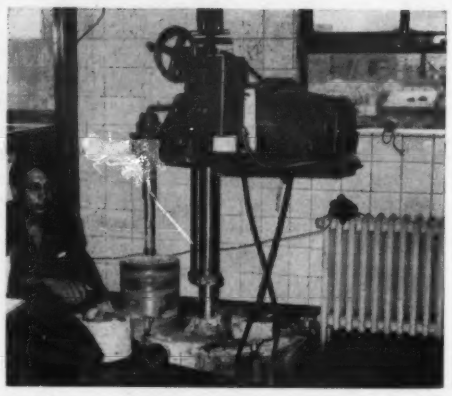
Isn't it time for *you* to become a Lennox dealer? Get the full story without obligation. Call or write your nearest Lennox factory.

LENNOX *World leader in indoor comfort for home, business, schools*

Lennox Industries Inc. founded 1895
Marshalltown, Iowa • Columbus, Ohio • Syracuse, N. Y.
Fort Worth, Texas • Salt Lake City, Utah • Decatur, Ga.
Los Angeles, Calif. • Des Moines, Iowa
Lennox Industries (Canada) Ltd. • Toronto, Montreal, Calgary and Vancouver



Diamond Drills Permit 650 To Remain At Work During Drilling of Concrete



CUTTING OPENINGS for the installation of heating and air conditioning posed some problems for the engineers and contractors during modernization of the American Medical Association building in Chicago. The Truco Model G portable drill at right was used with diamond core bits. It was said to have saved time and minimized noise and dust problems.

CHICAGO—When a modern heating and air conditioning system was installed in the 20-year-old American Medical Association building here as part of a $2 million modernization project, the need to cut more than 700 holes ranging from 3 to 14 in. in diameter through the floors of the nine-story structure and its six-story addition created problems.

Not only was there the question of whether so many holes would jeopardize the structural strength of the floors, but it was specified that work to be done with a minimum of interruptions to normal routines of the building's 650 occupants.

It was also specified that the work create no noise or dust problems which would render parts of the building unusable during operations and involve extensive cleaning up afterward.

It was immediately evident, according to Ray Flood of the firm of Walter H. Flood Co., drilling contractors, that any type of impact cutting would be impractical because the shattering effect would break the supporting tile in the structural arch far beyond the points of actual cutting and, also, because it would create dust, noise, and clean-up work throughout large areas of the building.

Flood, therefore, decided to use diamond drilling and chose a Truco Model G portable drilling machine, 10-hp. motor for the holes 10 in. through 14 in. o.d. and a Truco Model C portable drilling machine, 350 r.p.m. motor for the holes 4 in. through 8 in. o.d. Truco diamond core bits were used throughout. All equipment was made by Wheel Trueing Tool Co. of Detroit.

First holes were cut in the lowest floor. Engineers ran tests on the areas where the floors were drilled, using 180 lbs. to the sq. ft. where 50 lbs. was required under city building codes.

Tests were checked by the city building department inspectors and no appreciable deflection was found. Engineers reported, "The machines cut exceptionally clean holes without vibration and not even the mortar was disturbed to any extent. . . ." Tests were reported satisfactory.

In the newer part of the structure, the problem was toughness. Here the Truco diamond bits encountered concrete 8 in. thick reinforced with five or six bars crossing every hole. They cut through this tough combination at an average speed of 20 minutes per hole, diameters ranging from 4 in. to 14 in.

Since normal office work was going on all around the drilling operations and on the floor below, it was necessary to provide for the removal of water which lubricates the diamonds in the cutting edge of the drill.

Surface water was removed by a Truco vacuum water pick-up. Water trickling through the finished cut was caught in a pan braced against the ceiling below with a hose leading to a drum. This pan also caught the finished cores which weighed from two to 96 lbs. apiece.

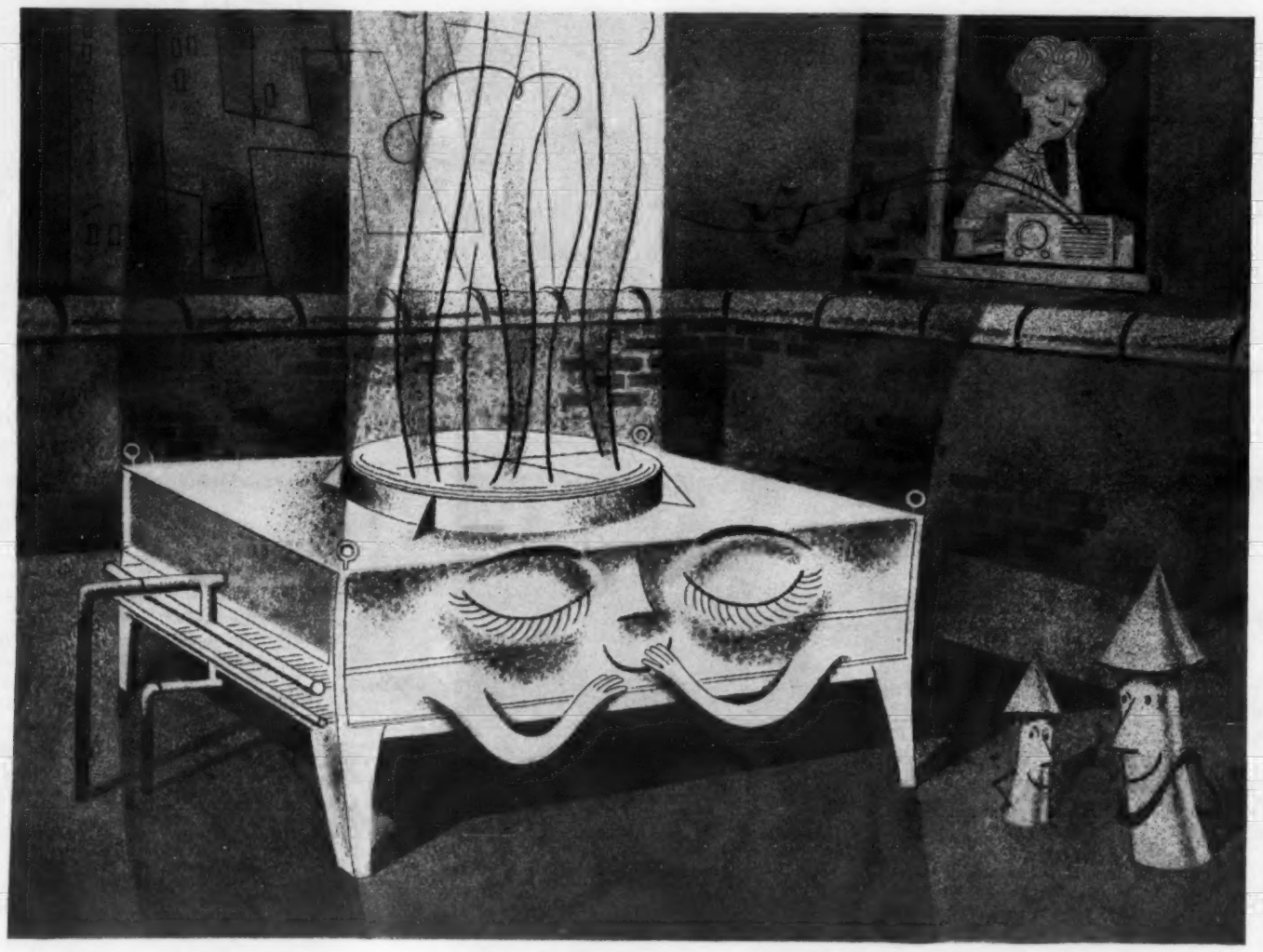
The number of holes by sizes was as follows:

In solid reinforced concrete 8 in. thick: 242—3-in. dia., 242—4-in. dia., 17—7-in. dia., 2—8-in. dia., 30—10-in. dia., 15—12-in. dia., and 12—14-in. dia.

In 4-in. reinforced concrete and 12-in. tile arch: 23—7-in. dia., 41—10-in. dia., 49—12-in. dia., and 42—14-in. dia.

In addition, there were extra holes negotiated directly with the mechanical trades.

Heating and air conditioning contractor was Galaher & Speck, Inc.



Ever hear of a bashful air-cooled condenser?

Check the new Halstead & Mitchell vertical air flow condenser

H&M's new ACV Air-Cooled Condenser with vertical air flow hates to be showy. It's so low and so quiet, you hardly know it's there—very appealing to owners, their neighbors, architects and engineers!

Roof loading is low, too, and air flow noise is directed away from surrounding structures. This delights building owners and tenants alike.

Vertical air flow models are available in 5 to 100 tons. And like all H&M Air-Cooled Condensers, the ACV series features exclusive Turbu-Flo fins, spaced wide to prevent clogging by air-borne dirt. Multiple circuiting is available for your specific needs *at no extra cost.*

Get the whole story on H&M Air-Cooled Condensers—with propeller or centrifugal fan. Ask your refrigeration wholesaler for a copy of the new bulletin AC-102. Or write to Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

ACV SERIES — 5 TO 100 TONS

HM Halstead & Mitchell

Air-Cooled Condensers • Finned Coil Products • Water-Cooled Condensers • Cooling Towers

PRODUCT SERVICE SPECIALIST

Field engineer with experience in heating and air conditioning industry. Requires knowledge of application, sheet metal operation, dealer training in heating and air conditioning methods and techniques, product service organizing at distributor level. Position offers excellent opportunity. Must travel. Salary commensurate with experience. Send complete resume to General Electric Company, Room 1117, Merchandise Mart, Chicago, Illinois.

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'Forced Humidifiers' (5)

14 Makes of Forced Humidifiers Described and Pictured

This is the fifth of a series of articles dealing with "forced humidifiers"—a relatively new product offering interesting sales possibilities for the residential heating and air conditioning contractor. Broad aspects of the subject are being discussed in the series, including the market, sales approaches, applications, and service plus specific information about 14 different makes.

Brief descriptions and photos of 14 different makes of forced humidifiers are being included in this series. The listing does *not* pretend to include *all* the manufacturers in the field, but certainly the leading firms are among those present, and just about every basic type of forced humidifier for residential furnace application is described.

It should be noted that many manufacturers also produce and market "self-contained" and other type humidifiers for residential, commercial, and/or industrial use, but these products have been purposely omitted because this series has been limited to units for residential furnace installation.

* * *

Capacity of the smaller Model HUM-1 is listed as 5 gals. per hour; the larger Model HUM-2 is rated at 10 gals. per hour.

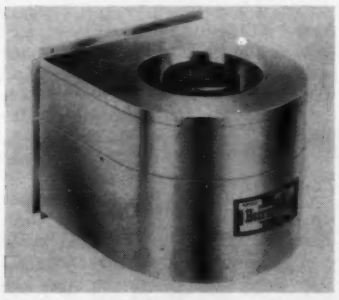
Century

Century Engineering Corp., Cedar Rapids, Iowa.

Available in two sizes, this firm's "air purifier-humidifier" is an evaporating type unit with a spray nozzle (two in larger model), wet and dry filters, and solenoid water valve. Air is forced through wetted filters.

Unit is mounted only in return air plenum of furnace.

Water supply is controlled by a solenoid valve, controlled in turn by a humidistat. A drain connection to pan at bottom of humidifier is required.



Herrmidifier

Herrmidifier Co., Neffsville, Pa.

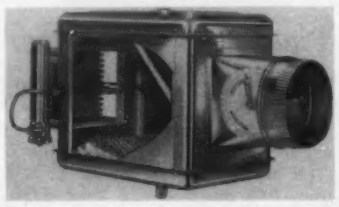
Available in two models for furnace application, these units are of the atomizing type with motor-driven spray wheels.

Model 400 (illustrated) mounts directly on discharge plenum of furnace; Model 700 is designed for location in return duct of warm air system.

Water supply of both models is controlled by float valve.

Operation of motor driving spray wheel is apparently controlled by blower, but presumably a separate humidistat could be used.

Capacities are given as ½ gal. per hour for Model 400; 1¾ lbs. per hour for Model 700.



Lennox

Lennox Industries, Inc., Marshalltown, Iowa.

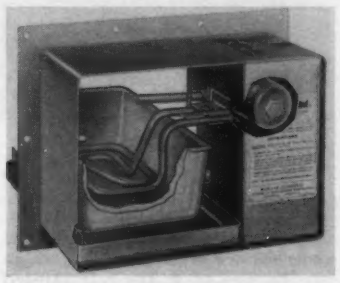
The Lennox Model WF2-15 "Humidispray" is an evaporating type unit with an atomizing nozzle spraying water on a spun-glass filter. Some warm air from discharge side of furnace is by-passed through humidifier whence it re-enters the furnace through the return air plenum.

A water filter is provided in line ahead of spray nozzle, and an air volume indicator on air outlet gives an indication of amount of humidification, and/or clogging of air filter pad.

Water flow is constant, so a drain connection to the humidifier is required.

Amount of humidification is controlled by an air volume damper on inlet side of unit.

Capacity, which depends on both air volume through unit and temperature drop of that air, is said to run as much as 1.86 gals. per hour at 200 c.f.m. and 70° temperature drop.



Mueller Climatrol

Mueller Climatrol Div., Worthington Corp., 2005 W. Oklahoma Ave., Milwaukee.

The Model 50-800 Mueller Climatrol humidifier is of the vaporizing type with an 800-watt immersion electric heating element.

It is intended for installation on the discharge plenum of the furnace.

Water supply is controlled by a solenoid valve, which, in turn, is controlled by a switch actuated by weight of water pan.

Control of the unit is tied into furnace blower operation, but a humidistat may, if desired, be wired in series.

A control dial is provided on the humidifier, however, regulating the "on" time of the heating element even while the blower is operating, thus controlling the amount of humidification that takes place. Nine positions as well as "off" are on the dial.

Maximum capacity, with constant fan operation, is listed as 26 qts. per day.

Little Giant

Little Giant Vaporizer Co., Inc., P.O. Box 7025, Oklahoma City 12, Okla.

Manufactured in two models, this humidifier is the atomizing type with a motor-driven vaporizing wheel.

It is designed for connection to the discharge side of the furnace so that some of the discharge air passes through the unit.

Water supply is controlled by a float valve.

A humidistat is supplied to control operation of the motor-driven spray wheel and, when used, an auxiliary blower on the humidifier.

Maximum capacity of Model 2-HBK (with auxiliary blower) is listed as 22 gals. per day; capacity of Model 2-HK (without blower) is listed as 18 gals. per day.

(To Be Continued)

DISTRIBUTOR DAN AND
THE CASE OF THE H-6 LEAK DETECTOR
INSIDE THE H-6 PART II
AIR CONDITIONING & REFRIGERATION SERVICE
IS THERE ANYTHING BESIDES THE ION SOURCE AND COLLECTOR THAT NEEDS TO BE REPLACED IN THE H-6?
YES, THERE ARE A FEW PARTS YOU MAY HAVE TO REPLACE. BUT VERY SELDOM, FOR EXAMPLE...
THIS SMALL LAMP AND THESE TWO TINY FUSES...
...AND THESE ELECTRONIC TUBES FROM THE AMPLIFIER CIRCUIT...
...AND THE PROBE LAMP TO REPLACE IT, FIRST UNSCREW AND PULL OFF THE PROBE TIP...
...THEN SIMPLY SLIDE OUT AND REPLACE THE LAMP.
WHEN THE PROBE FILTER GETS DIRTY, IT CAN BE PUSHED OUT EASILY WITH A WIRE AND REPLACED IN SECONDS.
AND BEST OF ALL ABOUT A YEAR'S SUPPLY OF EXPENDABLE PARTS ARE INCLUDED IN YOUR H-6 MAINTENANCE KIT.
Watch for more tips from Distributor Dan and...
FOR MORE COMPLETE INFORMATION ON THE TYPE H-6 LEAK DETECTOR, CONTACT YOUR NEAREST AIR CONDITIONING AND REFRIGERATION WHOLESALER: OR SEND THIS COUPON TODAY FOR BULLETIN GEA-6827, TO GENERAL ELECTRIC COMPANY SECTION 595-408 SCHENECTADY 5, N.Y.
NAME
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STATE
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INSTRUMENT DEPARTMENT
GENERAL ELECTRIC

Televance Gives Early Warning of Trouble

● An electronic device, called the "Televance Sentry," has been developed which will lower operating and maintenance costs of refrigeration and air conditioning systems, claims the Televance Corp., Dept. AH&RN, P. O. Box 3043, St. Louis 23.

The Sentry is designed to keep a constant watch over the refrigeration or air conditioning system and to signal the equipment owner or operator "at the very first sign of failure or inefficiency."

Some of the conditions which the device is said to detect and signal before a temperature rise occurs, include: refrigerant leaks, a highly inefficient compressor, broken or badly slipping v-belts, a flash gas condition, a restricted strainer or drier, a loose free turning motor pulley or compressor drive pulley, a tripped reset or motor overload device, a defective compressor motor, a blown fuse, or any condition that might result in non-operation of the compressor while the compressor motor control is calling for refrigeration.

In some cases, it is claimed that the Televance Sentry will signal that service is required up to months before the actual failure.

"There are, of course, a few conditions which the Sentry cannot detect and signal before a temperature rise," says Televance Corp.: "e.g., poor air circulation over the coil or evaporator. Therefore, special low voltage thermal switches are made available which can be located in the refrigerated space and connected to the Sentry so that it will also signal a temperature rise."

The basic Televance Sentry consists of a sensing probe which is located in the liquid line of the refrigeration system, and a main electronic control unit. A multiple selector switch which permits up to five condensing units to be connected to a single Sentry, and a low voltage remote alarm light is also available.

A unique feature of the Televance Sentry is said to be that its operation can be tested simply by pressing a test button.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

'Pipemaster Tee Turner' Does Job In 5 Minutes

● A portable plumbing tool which is claimed to cold-draw a "tee" from copper tubing in less than five minutes has been introduced by The Erie Tool Works, Dept. AH&RN, 735 West 12th St., Erie, Pa.

Called the "Pipemaster Tee Turner," the new device reduces the need for tee fittings and cuts down the number of soldered joints at each tee from three to one, according to the company.

Available for both water distribution and drainage systems, the Pipemaster Tee Turner can be used on a wide variety of tube sizes ranging from 1¼ to 4 in., and including DWV, M, L, and K, the company said.

In operation this tool forms a tee in three steps: (1) the copper tube is locked into a clamp; (2) a pilot hole is cut; (3) a forged spinner is inserted and turned until the copper wall within is pushed upward and tee is formed.

Electronic Cleaners Are for Homes, Small Bldgs.

● A new line of electronic air cleaners for installation in homes and smaller commercial and industrial buildings was announced recently by Electro-air Cleaner Co., Dept. AH&RN (Z), Olivia and Sproul Sts., McKees Rocks, Pa.

The units will be available in five models—one in the company's "Universal" line, and two each in the "Tec" line and "Compact" line.

"The new units were made possible by reducing ionizing-collecting cell plate spacing to 5/16 in. and the application of other refinements in cell and power pack design," it was explained. "The resulting units require less space, have lower prices, but retain essentially the same design which has been successfully used in Hi-C 'High Capacity' commercial and industrial equipment produced by Electro-air.

"The addition of the new models brings to 26 the number of models produced by Electro-air — both horizontal and vertical air flow, from 800 to 10,000 c.f.m. capacity."

Air-Cooled Condensers Feature Low Silhouette

● Horizontally mounted air-cooled condensers said to "present a lower silhouette, offer less wind resistance, and a lower per-square-foot roof loading" have been introduced by Acme Industries, Inc., Dept. AH&RN, 600 N. Mechanic St., Jackson, Mich.

The producer rates the new models, designated AAVC and named "Turbaire" vertical flow condensers, at 5 to 100 nominal tons' capacity. Seventeen sizes are offered, with the larger sizes of 60 to 100 tons' capacity being furnished as double units manifolded together.

Acme claims capacity ratings for the units are constant regardless of wind conditions, "an extra degree of stability for the entire air conditioning or refrigeration system."

Acme's Turbaire fin design, embossed with a special pattern shaped and spaced to increase the efficiency of heat transfer, is incorporated in all models.

Quiet operation is said to be achieved by the use of four-blade deep-pitch fans.

For year-round operation or when low ambients are encountered, "limitrol" control valves may be obtained from Acme.

NOW BETTER SERVICE AND LONGER LIFE...

Compact, rugged Furnas Electric contactors are designed to satisfy the particular performance and space requirements of the air conditioning and refrigeration industry. Furnas Electric contactors are UL component listed through 550 volts AC.

CLASS 41 - ACTUAL SIZE

Only FURNAS ELECTRIC offers all these features:

- Coil encapsulated in plastic practically eliminates failure due to moisture and fungus
- Pressure terminals for easier wiring
- "No Kiss" Potential Solenoid
- Weld-resistant visible contacts
- Mounts in any position

One-piece non-tracking molded frame and arc box for rigidity and alignment. 20, 30, 40 amp, 2, 3 and 4 pole devices all have interchangeable mounting dimensions. Not a throw-away device . . . coils and contacts can be easily changed in field. Auxiliary terminals and normally closed poles available on all contactors.

Furnas Electric offers a complete line of starters for across-the-line and reduced voltage applications, including exclusive "in-between" sizes 1¾ and 2½ . . . with encapsulated magnet coils, silver cadmium oxide contacts and non-tracking arc chambers for long, uninterrupted service.

Write today for Magnetic Contactor Bulletin 44-B1, or Catalog 5900 describing our other controls for refrigeration and air conditioning. 1111 McKee Street, Batavia, Illinois.

A79

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BATAVIA, ILLINOIS
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

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DEALERS FOR THE NOVI DELUXE AUTOMOBILE AIR CONDITIONERS

NOVI NO. 1 QUALITY PERFORMANCE PRICE

Superior Cooling
Beautiful Design Advanced Engineering
Greatly Reduced Installation Time

Adapter kits packaged and sold separately for greater flexibility in sales. Five Novi warehouses assure fast delivery and lower inventory investment.

90 DAY WARRANTY ON PARTS

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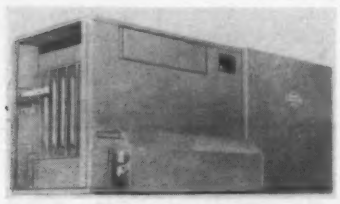
For information, write Novi Sales and Service, 20830 Coolidge Hwy, Detroit, Michigan

What's New



Johnson Adds Horizontal Gas-Fired Unit to Line

● A new horizontal gas-fired unit has been added to the "Air-Ease" line of heating and cooling equipment by Johnson Furnace Co., Dept. AH&RN, 2129 West 117th St., Cleveland 11.

The unit "features flexibility in that the burner and draft diverter can be installed on either side," it was stated. "This permits air flow from left to right or right to left, with vent horizontal or vertical at the front or at the rear of the unit. Capacities of the new NMS units are from 70,000 to 140,000 B.t.u.h. input."

Pyramid Develops Amprobe Kit

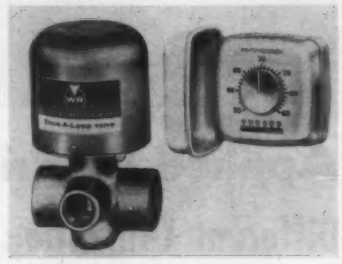
● Development of a kit designed to hold an "Amprobe" snap-on volt ammeter and accessories in one compact case has been announced by Pyramid Instrument Corp., Dept. AH&RN, 630 Merrick Rd., Lynbrook, L. I., N. Y.

Constructed of cowhide, the kit measures 7½ in. by 10 in. by 2½ in. yet has interior space for not only test instruments but small hand-tools, it was pointed out. The Test-Master Kit is available in two models.

The basic unit in every Test-Master is a model in the Amprobe rotary scale series. For example, the TM-33 contains the Amprobe RS-3 snap-around volt-ammeter-ohmmeter with five current ranges and three volt ranges. In addition, the TM-33 holds an Amprobe "Deca-tran" which extends amperage readings 10 times, as high as 1,200 amps., and the Amprobe energizer which multiplies the sensitivity of any Amprobe 10 times for readings on small appliances and fractional horsepower motors, it was stated. The TM-33 will sell for $84.50.

The other Test-Master Kit is the TM-11 which contains an Amprobe RS-1, "Economy" snap-around volt-ammeter plus a Deca-Tran and an Energizer for $71.75.

Zone-A-Loop Controls Single-Pipe Systems



● "Zone-A-Loop," a zone control package for single-pipe hot water heating systems, is being offered by White-Rodgers Co., Dept. AH&RN, 1209 Cass Ave., St. Louis 6.

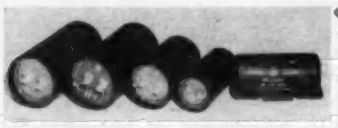
Designed for use with either new or existing systems, Zone-A-Loop provides all the advantages of zoning, but reduces installation costs with simplified components and low-voltage wiring, the company said.

"Each zone is equipped with a low-voltage 'Fashion' thermostat and a small Zone-A-Loop automatic water valve," it was stated. "Of rotary design, the valve allows unrestricted flow through the feeder pipe when the thermostat is not calling for heat.

"In use, the valve is mounted at either inlet or outlet of the radiator. On call for heat, the valve's specially-designed 'half-round' stem rotates 120° from 'closed.' Flow in the feeder pipe is divided; part diverting to the radiator, the rest by-passing to the next zone. With the zone satisfied, the valve stem again rotates, closing off flow to the radiator and allowing unobstructed flow in the feeder line."

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.



Alumalytic Capacitors Introduced

● Its Electronic Specialty Capacitor Product Section at Irmo, S. C. is now manufacturing "A-C Alumalytic" capacitors for motor-start service, announces General Electric Co., Dept. AH&RN, Schenectady 5, N. Y.

These aluminum electrolytic capacitors are designed to supply "out-of-phase" current for high starting torque motors. Typical uses are with air conditioners, pumps, compressors, and other non-continuous duty a.c. applications.

"Current test data indicate that these long-life capacitors provide up to one third lower losses than minimum industry standards, and have an increased capacitance per unit volume," the announcement said. "Units show stable electrical characteristics after as many as 75,000 starts."

Standard voltage ratings for capacitors are 110, 125, 165, 220, 250, and 300VAC. A wide range of microfarad ratings is available.

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The ORIGINAL LIQUID Ice Machine Cleaner. Works fast yet safely. Produces FRESH SMELLING flakes and cubes.

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1. Goes into solution quickly — even in COLD water.
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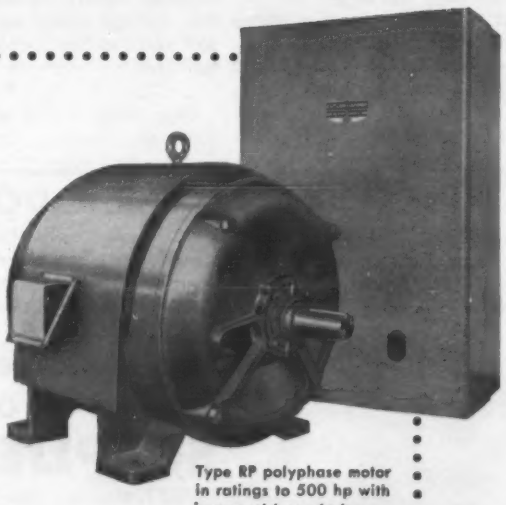
GARMAN COMPANY ST. LOUIS 25, MO.

WAGNER ELECTRIC MOTORS . . . THE CHOICE OF LEADERS IN INDUSTRY

End Voltage Drop and Line Disturbance Problems caused by starting BIG MOTORS . . .



Type RP polyphase motor in ratings to 500 hp with increment type starter.

Use Wagner Increment Motor-Starter Combinations

Increment starting is the easy, inexpensive way to limit the inrush of starting current in motors up to 500 horsepower. And, you do it *best* with Wagner Increment Motor-Starter Combinations . . . polyphase open-type, totally-enclosed, or explosion-proof motors and magnetic increment starters.

Line disturbances are reduced because current taken from the line is not broken during the starting period. Motors start sure and fast . . . reach full speed in a matter of seconds. And . . . Wagner combinations cost less than motors with primary resistance or auto-transformer type starters.

Two more plusses: The compact, relatively lightweight starter is easy to connect . . . needs very little attention. The motor requires only regular inspection, cleaning, and lubrication . . . maintenance is minimized.

While 2-step combinations are suitable for most applications . . . 3, 4, 5, or 6-step increment motor-starter combinations are available for installations where unusually low inrush of starting current is required. All meet the polyphase motor-starting requirements of AEIC-EEI-NEMA.

It's possible you can save money on your big jobs with Wagner Increment Motor-Starter Combinations. A Wagner Sales Engineer will help you. Call the nearest Wagner branch or write us for Bulletins MU-128 and MU-195.

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ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

Henry R. Pataky Becomes Manufacturers' Agent In Ohio Territory

LIMA, Ohio—Henry R. Pataky has resigned as director of sales for a furnace manufacturer to become a manufacturers' representative.

He has formed the H. R. Pataky Sales Agency with offices at 2006 W. Spring St. in Lima.

Pataky will cover Ohio and the surrounding areas for manufacturers in heating and air conditioning and allied fields. Current lines include D. H. McCorkle Co., Berkeley, Calif.; Standard Stamping & Perforating Co., Chicago; and Rymco, Inc., Detroit.

Pataky was formerly general manager in charge of sales for one of the leading register companies.

Applied Electrical Theory (10)

Different Utilization Voltages Single and Three-Phase Power

How?

As explained in the review of power generation, transmission, and distribution, electricity is normally generated and transmitted three-phase, 3ϕ, and at very high voltage. For each 3ϕ circuit leaving the generating station, three wires are needed.

At substations the transmission voltage of, say, 120,000 is stepped down to the 4,800 distribution voltage. Again, three wires leave the substation and go downtown to the network transformers or to residential pole transformers. From these three lines can be obtained all the combinations of phase and utilization voltages. Presently, the common combinations are:

Utilization Voltage	Service
120 & 240—1ϕ	120/240: 3-wire
120 & 240—1ϕ 240—3ϕ	120/240: 4-wire
120 & 208—1ϕ 208—3ϕ	120/208: 4-wire
120 & 240—1ϕ	240: 2-wire
240—1ϕ	240: 2-wire
120 & 240—1ϕ 416—3ϕ	240/416: 4-wire
120 & 240—1ϕ 460—3ϕ	265/460:*4-wire

*also termed 277/480

Frequently, the 120/240-volt combination is referred to as 110/220 or as 115/230. The first designation refers to utilization voltages used in the early days. As it became obvious that higher voltages were desirable, the supply went through 115/230 to today's 120/240. All can be found today, but replacement services all go to the higher voltages.

One other point must be considered before we begin our discussion of specific voltage-phase combinations. That is, the significant variation which sometimes exists between **nominal utilization voltages** and the actual line or **supply voltage.** Since it is impossible for the power company to hold exactly to a given voltage, they are allowed a plus-or-minus variation, in some areas as high as 10%.

So it is possible, on a nominal 240-volt line, to have supply voltages as low as 216, as high as 264. In some circumstances, such variations can cause malfunction or failure of equipment, especially of motor-driven apparatus. An example: Most motors are designed to operate with a plus-or-minus 10% voltage supply. A motor rated for 230-volts will operate reasonably satisfactorily at voltages as low as 207, as high as 253.

Some motors, however, are sold as usable on either 208 or 230-volt lines. Assume the 208-volt motor is on a 230-volt supply line and that the line voltage varies plus 10% to 253 volts. This is within limits for a 230-volt motor, but the 45-volt overvoltage (253-208) represents a **21.5% overvoltage for the 208 motor.**

Assume a 230-volt motor on a 208 supply. With the allowable 10% voltage drop, the voltage would be 187. **For a 230-volt motor, this represents a 19% undervoltage.**

Excessive voltages result in higher pull-out torques on the motor, less amp draw, less heating, lower power factor, and lower efficiency. Insufficient voltages give lower pull-out torques, more heat, more amps, higher power factor, and higher efficiency. Optimum design and operation call for these factors to fall at engineered levels.

One possible significance of this unavoidable variation in line voltage, according to one utility spokesman: **"When, in his design, the equipment manufacturer takes advantage of the fact that voltage is USUALLY HIGHER than nameplate and that he can cool the motor with refrigerant, he is cutting down the voltage range through which the motor can operate. If the voltage is a little low, the machine will not function where an ordinary motor would not be affected."**

Discussing the use of a 220-volt motor on a 208 system: "Conditions must be favorable or the operation will not be satisfactory. In general, our 208-volt system is somewhat stiffer so at the meter we may not go below 197 volts. But, if the building wiring causes a further 5% voltage drop, we will have 187 volts at the motor, which is too low."

* * *

The three wires approaching the distribution transformer carry the three-phase, 4,800-volt power. Inside the transformer, the voltage is reduced to utilization levels and a ground wire is tapped on, so that **four wires** leave the transformer in areas where both 1ϕ and 3ϕ power are needed.

In residential zones, where normally only 1ϕ is needed, only two of the 4,800-volt **primary wires** enter the transformer. In this case, three wires called **secondary** wires leave the transformer. (Even though 3 wires enter the home from the pole transformer, the power supply is 1ϕ, not 3ϕ. **The reason is that** one of the wires is a ground, or neutral, wire with no voltage-to-ground, whereas the three 4,800 primary wires are all **hot,** each carrying 4,800 volts. The secondary 4 wires from a transformer for industrial areas give 3ϕ between the three hot wires, and 1ϕ between any one hot wire and the neutral fourth wire.

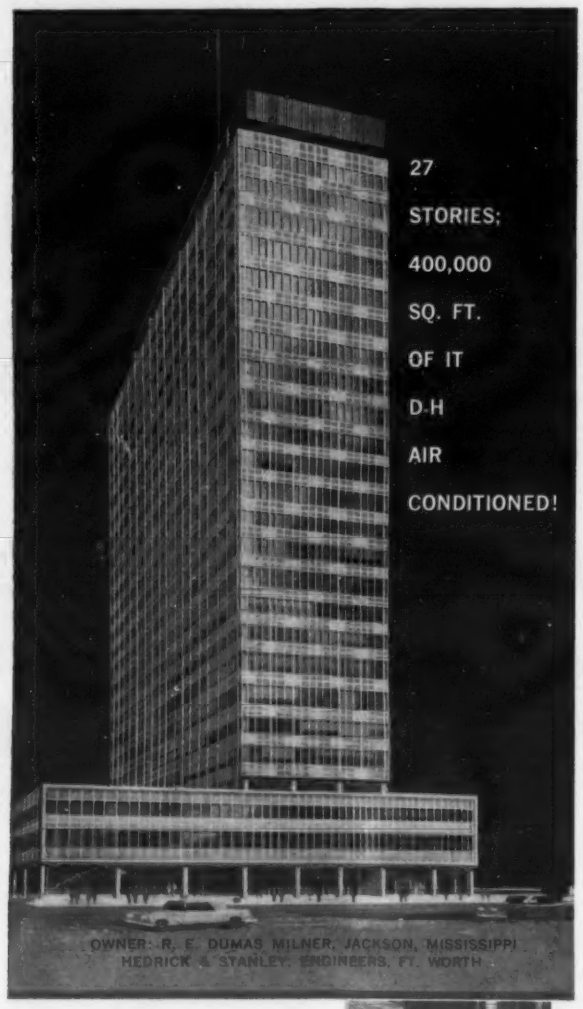
For proper application and installation of electrical equipment, such as air conditioners and furnaces, it is necessary for the contractor to be able to identify the type of electrical service supplying the structure. Most often, the service entrance is tagged with proper identification data. Where this is not so, a little observation, a little testing will identify the service.

1. In the older sections of some cities, **two-wire,** single-phase service is still found. One conductor is usually grounded and the voltage from phase-to-neutral is 110 or 115.

2. The most frequently encountered service today has **three wires,** two of them fused, the third grounded. To this neutral wire will be connected a group of terminals in the fuse box, and all these terminals will be electrically connected together. As a further safety measure, even though the neutral third wire is grounded at the transformer pole, a wire will run from the group of neutral terminals to a water pipe or other physical ground.

This service entrance provides two utilization voltages, 120 and 240 (or 115 and 230, or 110 and 220) and single-phase power. With a voltmeter, it is possible to determine the voltage across the two hot wires is 240. The voltage from either hot line-to-neutral is 120.

Two 120-volt lamps, of the same wattage, can be used to identify this service, if no voltmeter is available. Connected in



24 PACE-SETTING NEW D-H HIGH PRESSURE H.C.D. AIR HANDLERS DO IT ...AT NEW KROGER BLDG., CINCINNATI.

NEED LITERATURE?

d-h SINCE 1910

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SUPPLIES and PARTS

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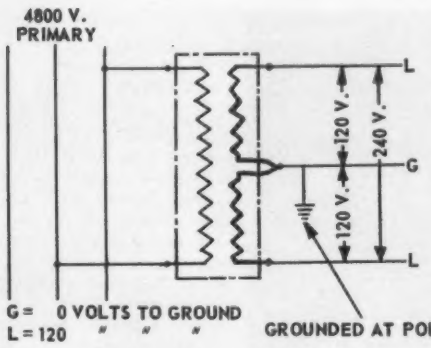
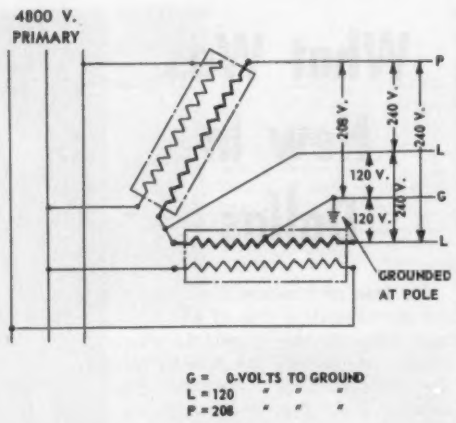
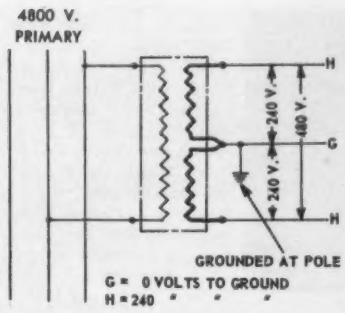
FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES





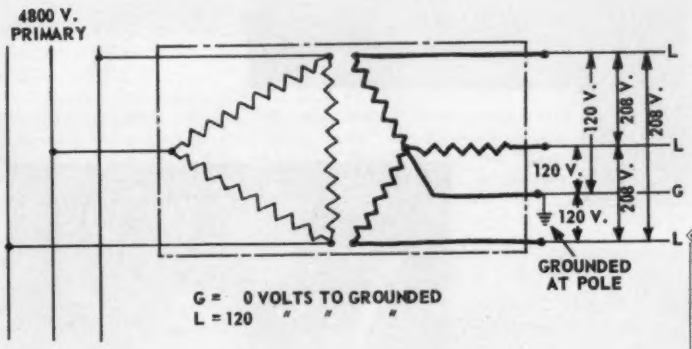


This service entrance supplies 1ϕ, 120-volt and 3ϕ, 208-volt power.

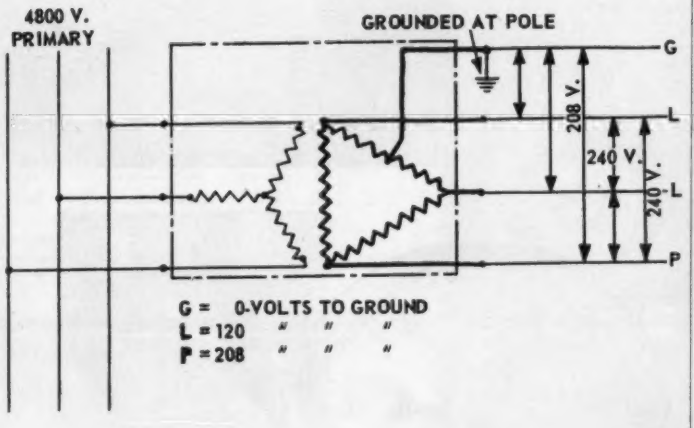
The 3ϕ, 208 power, like the 3ϕ, 240-volt in (3) above, is always from phase-to-phase, never from phase-to-neutral. Whenever connections are made phase-to-neutral, there exists a single-phase circuit. Although it is possible to operate an ungrounded single-phase circuit between any two hot wires, this is not normally recommended.

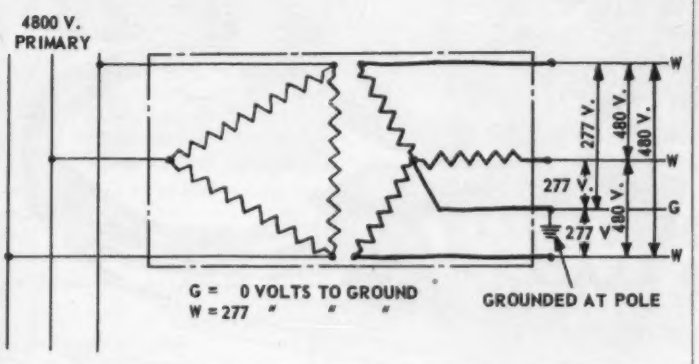
Two test lights will glow at almost full brilliance when connected between any two of the hot lines. They will glow at half brilliance between any hot wire and neutral.

5. Connections in the transformer can be such that instead of the secondary supplying 120/208, they supply 120/240, single and three-phase, over four wires. Again, the three hot wires are fused, the neutral is not. Phase-to-neutral voltage is 120; phase-to-phase is 240 volts. Such a transformer may also be tapped to give one single-phase 208-volt circuit—(Y-Delta-4 wire).



THESE SEVERAL SCHEMATIC drawings show specifically how the several utilization voltages and phases are obtained by various transformer connections.





series, the two bulbs will light to full brilliance when connected between the two hot wires supplying 240 volts; the lamps will burn at half brilliance when connected between one hot wire and the neutral. (See article 3 in this series for an explanation of voltage drop in a series circuit, the reason for the varying brilliance of the test lamps).

3. It is also possible for three wires to bring in 240-volt, 3ϕ power alone — no single-phase.

In this case, no wire is grounded; the phase-to-phase voltage between any two lines will read 240 on a meter, will light the series-wired test lamps to full brilliance.

This is a good place to point out that when any branch of a 3ϕ circuit fails, **only one phase is left, not two.** With wires A, B, and C, the three phases are obtained by connecting across AB, AC, and BC. Remove B, for example, and it is only possible to get current from the AC combination, and this phase usually is out of balance since it is burdened with more than its designed load. "Single phasing" of a motor, when this happens, can burn out windings.

A
B
C

Two-phase power, now all but gone, requires four wires—two for each phase, actually two separate 1ϕ circuits.

4. A service entrance with **four wires** entering it is likely to be a 208-volt, 3ϕ service very common now in large downtown areas, shopping centers, new schools, factories, and warehouses. Three of the wires are hot; the fourth is grounded.

file guide—ELECTRICITY: power distribution

Next: DIFFERENT UTILIZATION VOLTAGES SINGLE AND THREE PHASE POWER WHY?

This is the END of room cooler AIR FILTER PROBLEMS!

- RIGID ALUMINUM CONSTRUCTION ...holds shape, won't shred
- EASILY CUT TO SIZE... with knife or scissors
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Jumbo size media, framing material and simple effective tools available for easy fabrication of framed filters

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RIGID ALUMINUM CONSTRUCTION ...holds its shape, won't shed particles, is safe, clean and easy to handle.

ELIMINATES STOCKING OF MANY SPECIAL SIZES...Easily cut to size, the 15" x 24" Trim-To-Size Filter together with the standard E Z Kleen for popular sizes fulfills virtually all room cooler filter requirements.

WASHABLE...with a stream of water. A real sales feature that keeps filter and unit at peak efficiency.

FULL PROFIT MARGINS...The Trim-To-Size E Z Kleen is the only product of its kind on the market. Cut-price competition from "almost the same" products is eliminated.

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PLUS EXTRA PROFITS with Super Filter Coat Adhesive

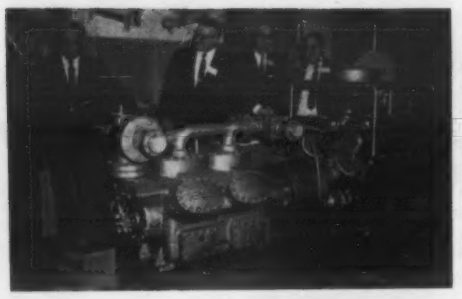
The fast selling adhesive, in two handy containers—with push button spray for self-contained pump spray. Gives you the sales story of odor-removal, germicidal property, simplified washing and like-new efficiency after re-coating.

NEW DISPLAY RACK

Convenient, space-saving wire display rack holds attractively packaged Trim-To-Size Filters and a large supply of Super Filter Coat Adhesive. Accelerates sales of both filters and adhesive. Available at your jobber.

RP Products of Research

Write... RESEARCH PRODUCTS Corporation Dept. 233, Madison 1, Wisconsin



HUDDLED AROUND NEW Ready-Power 110-ton gas engine driven packaged chiller with Carrier compressor and condensing units are (l. to r.) H. J. Rosen, Roco Equipment of New Orleans; N. K. Hall and Hicks Edwards, Ready-Power; M. E. Orelup, Oklahoma Natural Gas Co., Tulsa; and William Wendt, Ready-Power.

What Was New In Dallas

On this and succeeding pages are pictures of a few of the new and newsworthy products displayed at the Second Southwest Air Conditioning Exposition in Dallas, Feb. 1-4. More will be printed in later issues.

Time did not permit photographing products at all the more than 200 booths. If any exhibitor displayed a new item that was not photographed by the NEWS and which has not been covered in recent news stories, he is invited to submit a photograph and description.

UPFLOW FURNACE of 100,000 B.t.u.h. capacity with compact cooling coil of 24,000 B.t.u.h. capacity introduced by Day & Night Mfg. Co. is examined by W. J. McFarland, factory representative (l.) and George Dunsmoor, district manager at Tulsa.

REMOTE AIR-COOLED condensers and companion blower-coil units in 10 and 15-hp. sizes have been added to the Westinghouse line. Twin compressors with independent circuit are featured, according to W. C. Laughlin (l.) and Robert Hathaway of Westinghouse Houston district office.

DUST MAGNET filter with Poly Mag 80 offers increased heat resistance (to 230° F.) and less pressure drop, reports Gene O'Sullivan of Stoddard Industries, Inc.

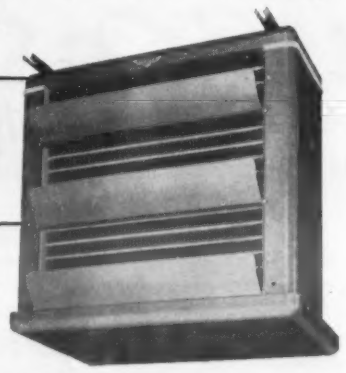
LARKIN

QUALITY ENGINEERED TO DO A BETTER JOB

HALF-TURRET HUMI-TEMP
Model HT

This forced convection unit is ideal for walk-in coolers and cold storage rooms. Available in capacities from 2500 to 10600 Btu/hr at 10° TD. Mounts flush to wall and ceiling for maximum head room and storage space. Engineered to provide 100% usage of coil surface. Has built-in heat exchanger, patented LARKIN cross-fin coil, permanently lubricated motors, fully insulated drip pan.

STANDARD HUMI-TEMP
Model MT



Available in capacities from 2400 to 32000 Btu/hr at 10° TD, which accurately balance condensing units of the same capacity. Will maintain proper temperature and humidity in walk-in coolers and many other applications. Has LARKIN cross-fin coil, insulated non-sweat drip pan, adjustable louvers, permanently lubricated motors. Easily serviced if necessary.

Hundreds of thousands of LARKIN units are in use successfully from coast to coast and in many foreign countries proving their dependability.

See your wholesaler or write for catalog 1049 B

LARKIN COILS INC.

519 Memorial Dr., S.E. P. O. Box 1699
ATLANTA 1, GEORGIA

HOLDING GENERAL ELECTRIC CO.'s new proportional probe for use in contaminated atmospheres in her right hand, Sharon Lary points out that the new low cost leak standard designed for economical detector testing and calibration, in her left hand, is priced under $200.

NEW LUXAIRE 4-hp. remote condensing unit with top mounted coil and propeller type fan was shown by C. A. Olsen Co. W. J. Watchler, director of engineering (l.), runs over features with E. H. Welton, Southwest sales representative.

Project Engineer

Midwest Household Refrigeration Manufacturer has opening for Project Engineer. Should have at least three (3) years actual engineering experience in this field.

Must have B.S. degree in either Mechanical Engineering or Electrical Engineering

BOX A6464, Air Conditioning, Heating & Refrigeration News.

An all-purpose, all-quality thermometer for any and every frozen food cabinet...that's the

MARSH *Universal*
FROZEN FOOD CABINET THERMOMETER

Here is Marsh quality, accuracy and beauty at a moderate price. Small and compact, but with a bold, easy-reading 2½" dial having increased scale divisions in the working range. Accurate to plus or minus one division over entire scale—not affected by ambient temperature.

Its white enamel case with nickel plated ring is an adornment to any cabinet. Note ease of installation pictured above ...also unique ball and socket joint providing adjustment to best reading angle. Thermometer is standard with 5½ feet of nickel plated capillary tubing. Write or, better still,

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Division of Colorado Oil and Gas Corporation
Dept. D, Skokie, Ill.

Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103rd St., Edmonton, Alberta
Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas

MARSH *Refrigeration Instruments*

Thermometers • Gauges • Water Regulators • Solenoid Valves • Heating Specialties

SPECIAL AIR HANDLING unit built to fit a space problem in a New Orleans apartment building was displayed by Air Conditioning Industries, Inc. of Houston. Baker Lee Shannon, president (center), tells Howard J. Rosen of Roco Equipment, New Orleans (l.) and Joe N. Powell of Powell Equipment Co., Houston, about it.

LEFT: LATENT COOLING UNIT for churches will go into production soon, F. M. Angus of Texas Refrigeration & Engineering Co. (l.), tells C. R. Bell of Bell Refrigeration Co., Oklahoma City. Working model is on display.

LEFT: HIGH VELOCITY air mixing unit introduced by Carnes Corp. draws pretty smile from Pat Burt of Dallas. In background is Carnes new modular diffuser.

RIGHT: GRAVITY COOLING SYSTEM designed for separate zone control cooling was demonstrated by Edwards Engineering, Inc. Over the head of W. L. Clark, Edwards production manager (l.), is the ceiling suspended evaporator coil. Between Clark and E. A. Bogucz, Edwards vice president, is a wall-hung box containing the compressor. Above Bogucz is the Air Vec condenser coil.

RIGHT: FINDING AN INTERESTED audience, Stuart S. Chosid, director of sales for Congress Drives Div., Tann Corp. (center), demonstrates new vari-pitch improved pulley for Tom Criswell of General Electric Co. (l.), and W. H. Tonner of Morrison Products, Inc.

COMPLETELY redesigned furnace with height lowered to 54 in. will be announced April 1 by Crane Co. But Tom Goodlett (l.), and Harry Magee, sales representatives, give Southwest dealers an advance look.

DUO-FLO BALANCING and purging valve and new Thermoflo indicator displayed by Bell & Gossett Co. are eyed by William Carlisle, OEM sales for Bell & Gossett.

We build private brand air conditioning and refrigeration equipment for several hundred accounts, better and at less cost than they can do it for themselves.
"Why don't you get the whole story?"

WESTERN SUPPLY CO.
Contract Manufacturing Div.
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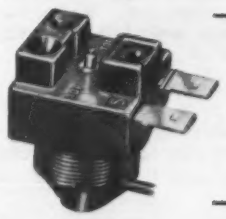
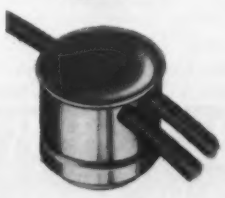
KLIXON DOME MOUNTED PROTECTORS†

. . . permit maximum safe compressor performance under overload conditions . . . shut the motor down when maximum allowable winding temperature is reached . . . automatically restart it when operation can be continued safely.



KLIXON MOTOR STARTING RELAYS†

. . . complete the combination required to start and protect compressor motors. Their positive action over a wide range of voltage and long life eliminates starting troubles.



KLIXON HERMETICALLY SEALED THERMOSTATS

. . . give reliable temperature control unaffected by frost, moisture, altitude or cross-ambient effect . . . available for heating or cooling applications.

†Replacements are now available through distributors

Dependable operation is a must in such equipment as refrigerators, air conditioners, frozen food cabinets, freezers and heat pumps. That is why most manufacturers of compressors and complete equipment specify and use KLIXON Controls.

KLIXON Protectors permit the compressor to operate at maximum safe capacity . . . assure long compressor life. KLIXON Motor Starting relays assure positive starts. And, KLIXON Thermostats give reliable temperature control. The result — refrigeration equipment operates dependably under normal and adverse conditions . . . costly service calls, maintenance and replacements are reduced . . . product reputation and customer goodwill are maintained.

Manufacturers who are looking for more safe capacity in their compressors or refrigeration equipment are invited to find out more about KLIXON Controls. Write.

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Explained by Dr. Walker

How Gases, Especially Air, Can Foul System, and What To Do About It

ATLANTIC CITY, N. J.— Problems resulting from the presence of contaminating gases in refrigeration systems and suggestions for cleaning systems were outlined by Dr. Walter O. Walker, dean of the University of Miami's division of research and industry, at the 22nd annual convention of the Refrigeration Service Engineers Society here.

For the purposes of this discussion, problems associated with moisture were ignored.

"There are a number of contaminating gases that get into the system or are formed in the system," pointed out Dr. Walker.

Various gases, for example, are introduced to check leaks.

"Carbon dioxide, nitrogen, and air are relatively safe, but don't use too much pressure," he advised. "You shouldn't use oxygen over. Oxygen with oil causes an explosion."

In using such gases for leak testing, make sure the gases are dry and employ a dehydrator on the low side, Dr. Walker explained. It's also necessary to have a pressure-reducing valve on the gas cylinder, he said.

After the leak test is completed, the gas used has to be removed from the system, and for this Dr. Walker recommended a vacuum pump, which is "much better than merely trying to purge," he said.

Don't Use Carbon Tet For Flushing Equipment

"Don't use carbon tet for flushing equipment," he also cautioned. "Besides being toxic, it will react quite readily with oil to produce a blackening effect or solid carbon. If you do use carbon tet, for heaven's sake take it out of the machine afterwards."

Another fluid used for cleaning systems, Refrigerant-11, has much greater stability, but if much is left in the system it, too, will contaminate the other refrigerant, Dr. Walker emphasized. If methyl alcohol is used for flushing it likewise must be removed.

Be Sure To Flush Out Gas Used To Flush Out Cleaning Fluid

"Be sure, also, that you flush out the gas you use to flush out the cleaning fluid before charging," he warned.

"Few of us realized, at least until recently, how much trouble can be caused by air in the system," Dr. Walker continued.

"Heating of oil in the presence of air will produce very greasy materials, including carbon, which can ruin valves and valve plates. Air in a system is bad business," he said.

Air is also associated with copper-plating, which still occurs and which can reduces clearances sufficiently to cause a compressor to bind and seize, Dr. Walker indicated.

Another result of air in the system is oxidizing of oil which in turn makes desiccants become "hydro-phobic," that is, "water hating," he explained.

The desiccant will still pick up moisture, but the process will be delayed, according to Dr. Walker.

Purging is an accepted method of removing air, but it is slow and also means losing a fairly substantial amount of refrigerant, he said.

"Some people believe letting a machine stand idle will cause the air to separate from the refrigerant, but this rarely works," declared Dr. Walkter.

Cleaning Hermetic After Motor Burnout

Turning to the subject of cleaning out a hermetic system after a motor burnout, he explained that acid and residues or "gunk" will be all through the system and have to be removed. Otherwise the scouring action of the refrigerant will cause the acid and gunk to burn out the new compressor and perhaps damage other parts.

Gunk can also result from a reaction between oil and refrigerant if the compressor starts operating at a high temperature, such as 375° to 400° F., although this is rare.

"But such cases do happen and they are related to cleaning out the system properly," Dr. Walker said.

"With cleaning a system you have the same problem as washing your hands," he went on. "You have to know what to use and how long to use it."

Cleaning System with Refrigerant-11

Suggestions on cleaning a system with Refrigerant-11 were offered by Dr. Walker.

"At first, of course, you have removed as much of the original oil-refrigerant charge as you would ordinarily, being careful not to get the stuff on your hands or clothes. Hydrofluoric acid can cause severe blisters."

The motor-compressor is removed and the thermostatic expansion valve is by-passed.

"You must be sure you have complete access throughout the entire system, and you must have enough Refrigerant-11 to fill the system so that you have constant flow through the system," Dr. Walker said.

(On large systems where much moisture is present, a mixture of Refrigerant-11 and methyl alcohol has been used successfully, he noted.)

After circulating the solvent for some time, check its appearance. If there is no intensification of color after awhile, then discharge the first charge and put in a fresh charge of Refrigerant-11.

If the second charge comes out perfectly clear, then the system may be assumed to be clean. It will have to be evacuated, of course, and Dr. Walker advised putting a filter in the suction line and a drier in the liquid line.

Cleaning Time Varies

There's no way of determining in advance how long it will take to clean a system because all jobs are different, commented Dr. Walker, who further emphasized, "under no circumstances guarantee that you'll clean the job 100% satisfactorily because in this type of job you can never be sure."

As a check on success in cleaning a system, Dr. Walker suggested that a sample of the refrigerant be taken in a small, clean cylinder about a month after the system is put back in operation.

Turn the cylinder upside down and let some of the refrigerant drip onto white cloth and litmus paper. The latter will show if there's any acidity, and the white cloth will show up any other contamination, he explained.

On large systems, the moisture content should also be checked, he said.

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ALLEN-BRADLEY
Member of NEMA
Quality Motor Control

York Commercial Packaged and Room Units--

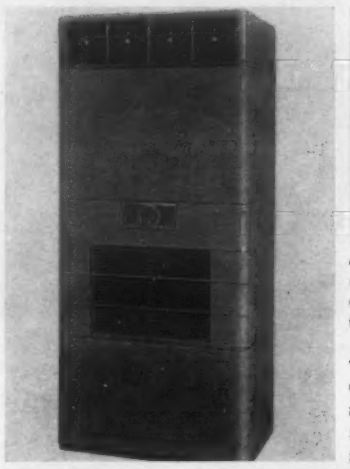
(Concluded from Page 1, Col. 2)

a number of inside coil units . . . the vertical EB120, the horizontal EB120, two EB60 vertical or horizontal sections.

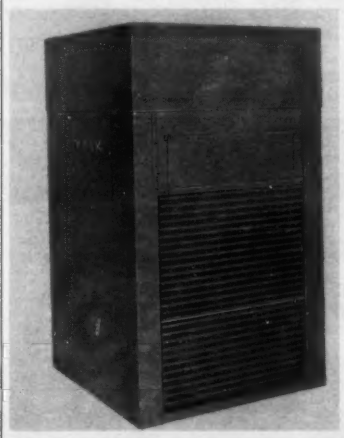
The Champion models have such features as cooling maze coils, twin multi-vaned blower wheels, extra large receivers, and York-built fully hermetic compressors.

According to James M. Farrell, room air sales manager at York, the company will offer three complete lines of room air conditioners in 1960.

"For added cooling power," it was stated, "York has engineered a brand new compressor. It features dual pistons with automotive type piston rings to insure top cooling capacity. A scientifically advanced system of jet-type tubes feeds refrigerant to the compression chambers.

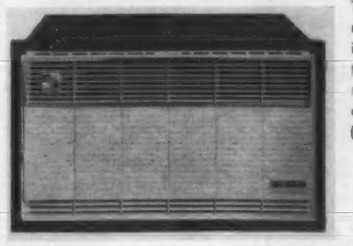


ABOVE is a decorator styled inside evaporator section for the EB90V Champion air-cooled commercial air conditioner made by York. A variety of free standing, ceiling suspended and direct to ductwork are available to fit six outside exhaust sections with capacities ranging from 4.7 to 15.7 tons.



OUTSIDE heat exhaust section for the Champion CA60 air-cooled air conditioner manufactured by York is shown above. This is one of six "remote" sections with capacities ranging from 4.7 to 15.7 tons and can be connected to a variety of self-standing, ceiling suspended or direct to ductwork inside evaporator sections.

"York's 1960 models are also engineered for ultra-quiet operation. The compressor features dual suspension, with rubber suspended internal mechanism and an external spring suspension to absorb vibration. Moreover, an exclusive acoustically designed front silences air sound without decreasing cooling power.



ACOUSTICALLY designed "floating front" styling, is a feature of the 1960 Discoverer, one of the most popular of the three lines of room air conditioners made by York.

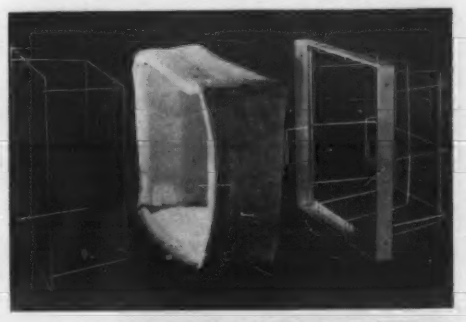
Farrell also pointed out several other changes in York's 1960 line. These include: A "hygienic-clean" filter, multi-direction air grilles, added durability with heavy gauge steel casings, cooling maze coils, variable cooling speeds, and an automatic thermostat.

The "Adventurer," the small line of air conditioners, is available in a 7½-amp, 115-volt unit and a 230-volt unit. The Adventurer is also available in reverse cycle models to provide heat. These compact, light-weight units are ideal for bedroom comfort, York said.

The medium-sized model, the "Discoverer," will also be available in 7½-amp, 115-volt models, 12-amp, 115-volt models, along with 230 and 208-volt units. The Discoverer will also be available in reverse cycle heat pump series.

A multi-room conditioner, the "Conqueror," will be made in 115, 208, 230-volt models in a wide range of amperages. The heat pump Discoverer and the Conqueror models will have additional electric heating available in the larger units.

All 1960 York models have been restyled.



THREE components of the new "Ulok" cube-type filters include: (l.) rustproof retainer wire which hold filter medium rigid; (c.) disposable Dynel filter medium; (r.) "basket" retainer which encases medium.

Cube Filters--

(Concluded from Page 1, Col. 4)

tion of the new unit is attributable to a lightweight Dynel modacrylic filtering medium, a uniquely processed filter batt, and open-side cube construction.

The filters are designed for use in commercial and industrial air conditioning and heating, dust entrapment, and process air systems.

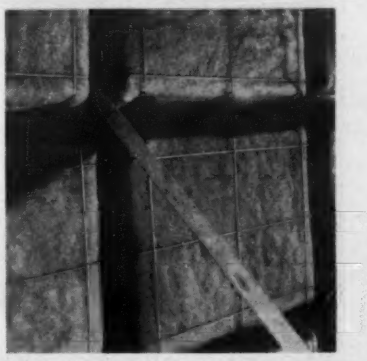
Shaped like an open box, the filter is made up of three components: the disposable high loft, 2-in. thick, Dynel filter medium; a "basket," or retainer, into which the medium fits; and a retainer wire that fits inside the medium to hold it rigid.

In operation, the air stream carries the dirt into the cube to the front surface of the downstream face of the filter. As dirt builds up on the downstream face, air flow is shunted to the sides of the cube.

"Actually, coarse material continues to be caught on the downstream face," Hillas said, "while the large filter area of the four sides traps the fines. The result of this progressive 'reverse loading' is that the unit shows an unusually low pressure drop even after it has collected several pounds of dirt."

The Dynel filter medium, being a synthetic fiber, is unaffected by moisture. Increased capacity for dust entrapment is also attributed to the batt, which is sewn on four sides to produce the cubic configuration.

The Ulok filters are listed by Underwriters Laboratory as Class II.



BANK of installed Ulok cube filters demonstrates how air is filtered through the sides of filter as well as the face.

Rated at 0.04 in. pressure drop at 2,000 c.f.m., the 20 by 20 by 20-in. Ulok unit offers users low-pressure drop service in a high velocity system.

"Ratings of this sort also offer design engineers the opportunity of considerably reducing the size of a filter bank," Hillas suggested.

Units are available with standard face areas measuring 20 by 20, 20 by 25, 16 by 20, or 16 by 25 in. For each of these, there are units that measure 8, 11, and 20 in. in the direction parallel to the air stream.

The area of a bank of filters required to do a given job may be halved by switching from conventional flat filters to 20 by 20 by 8-in. Ulok filters, it is claimed. Even larger savings in bank area are obtained using the units measuring 11 and 20 in. parallel to the air stream.

Disposal is said to be easier, too. When the filters have been filled to operating capacity, they may be collapsed flat and discarded.

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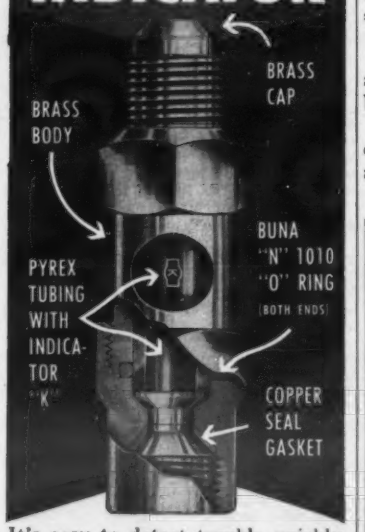
IN ANY AIR CONDITIONING AND REFRIGERATION LIQUID LINE

KEROTEST MODEL R8IC IN-LINE Liquid INDICATOR



It's easy to detect trouble quickly in refrigeration lines with this indicator. Letter "K" is etched on pyrex heat-resisting tube which shows through sturdy brass body at sight port. When "K" is not magnified, it indicates a shortage of refrigerant or a clogged line. Available in male and female flare sizes. Maximum operating pressure —500 p.s.i. and maximum temperature 200° F. Easy to install.

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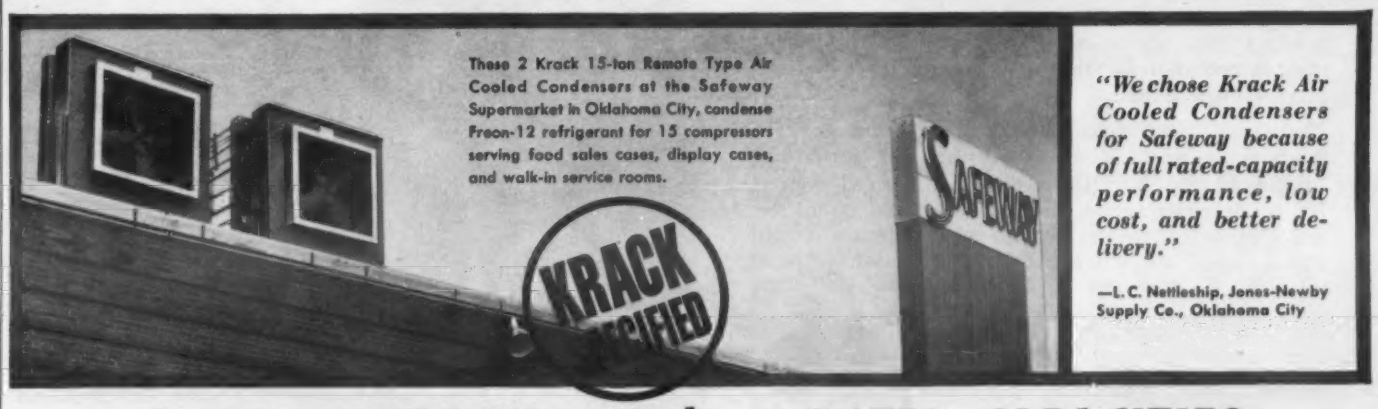
These 2 Krack 15-ton Remote Type Air Cooled Condensers at the Safeway Supermarket in Oklahoma City, condense Freon-12 refrigerant for 15 compressors serving food sales cases, display cases, and walk-in service rooms.
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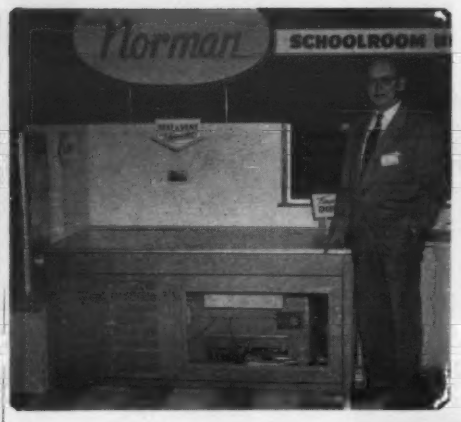
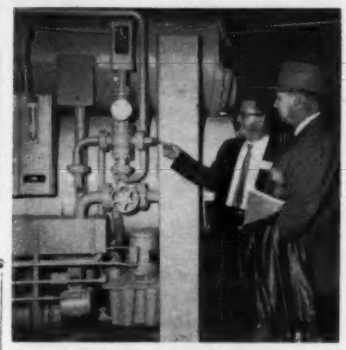


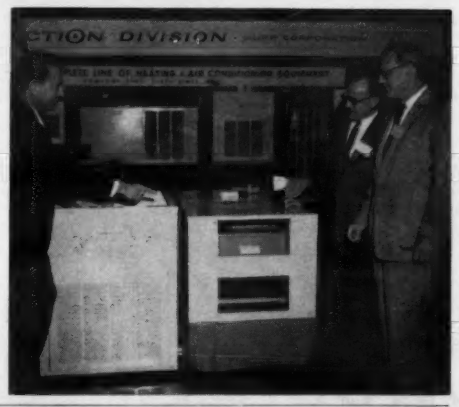
LOWER HEIGHT schoolroom heating unit to meet the trend to lower windows is displayed by Norman Products Co. Ned Norman, president, shows the heating unit encased in a secondary enclosure.

LEFT: COMPACT 17-TON air-cooled condensing unit with vertical discharge was displayed by Aimco Products Corp. From l. to r. are: J. D. Swank, project engineer; William Thorson, Atlanta distributor for Yuba Consolidated Industries, Inc.; and William Matheny, Jr., Aimco research and development engineer.

PATENTS have been omitted from this issue to permit publication of pictures from the 2nd Southwest Air Conditioning & Heating Exposition in Dallas.



CARRIER LIQUID CHILLER in which heat input requirement is reduced in direct proportion to the load requirement is shown by D. F. Smith (l.), Memphis representative of Carrier's Machinery & Systems Div., to C. W. Pennington of the University of Florida.



RIGHT: FOR INFORMATION ABOUT Perfection Industries' new 3-hp. self-contained heat pump (l.) and 4-hp. remote air conditioner, Guy Hall of the Florida Power Co., St. Petersburg (r.), goes to experts: Milo Chavez, sales manager for air conditioning and heat pumps (l.), and Carl Millsom, vice president of sales and advertising.

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NEW WESTERN SUPPLY CO. compact 5-hp. self-contained, air-cooled condensing unit is topic of conversation between B. B. Gage, Salina, Kan. contractor (l.) and J. C. Owens, sales manager for Western Supply.

THREE POINT LUG MOUNTING for blower motors replaces the spider bracket that took 11 bolts for tightening and assembly. Demonstrating the Emerson Electric Co. device is E. B. Enderson, sales supervisor for Emerson Western Co., Colorado Springs (l.). C. C. Lynes, Emerson Electric salesman in Texas and Oklahoma, holds a spider bracket.

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MECHANICAL ENGINEER with over 25 years in all phases of research, development, design, contracting, teaching, etc. in refrigeration and air conditioning wants responsible position in these fields. Would like to develop gas or oil fired heat pump inherently suited to northern climates for progressive manufacturer. BOX A6473, Air Conditioning, Heating & Refrigeration News.

SERVICE AND installation mechanic, 17 years' experience in heating and air conditioning. Experience in steam, hot water, and forced air and air or water cooled refrigerated air conditioning systems. Oil, coal, or gas fuel systems. Wish to relocate in Southwest as mechanic, foreman or representative. Experienced and capable. BOX A6475, Air Conditioning, Heating & Refrigeration News.

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SMALL MANUFACTURER of heat pumps (located in Los Angeles) has immediate opening for potential general manager. This position with a financially sound company represents a great challenge with commensurate salary opportunities. Write: BOX A6471, Air Conditioning, Heating & Refrigeration News.

SERVICEMAN FOR N. J. firm. Experienced in heating and air conditioning; must have qualified background and ability to think for himself. Responsible job; steady work; top pay. Send resume to: BOX A6474, Air Conditioning, Heating & Refrigeration News.

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CHILLED AND hot water or direct expansion extended surface coils: 5 T.-4R—4 sq.ft. face area $117.00; 7.5 T.-4R—6 sq.ft. face area $149.00; 10 T.-4R—8 sq.ft. face area $181.00; 15 T.-4R—12 sq.ft. face area $245.00; 20 T.-4R—16 sq.ft. face area $310.00; 25 T.-4R—20 sq.ft. face area $375.00; 30 T.-4R—24 sq.ft. face area $440.00; Capacity based upon 45°R.T. & 67°E.A. w.b. 500 fpm coil face velocity. Wire • write • call for quotations for any coil requirements, ARCTICAIRE MFG. CO., 2201 Grand Ave., Tel. BA. 1-7055, Kansas City 8, Mo.

DEALERS, DISTRIBUTORS, agents—Remote air cooled - air conditioning. Heat pumps that defrost without reversing without loss of efficiency (patent applied for). High quality, competitive pricing. Some territory in North, East, and far West open—dealers anywhere. NATIONAL THERMATIC CORPORATION, Division of JOHN FELTER COMPANY, P. O. Box 7464, Houston, Texas.

ELECTRIC WATER coolers, bottle type with refrigerated storage compartment, manufacturer's closeout due to model change. Tecumseh ⅛ h.p. unit, fan cooled condenser, stainless steel refrigerated compartment. Attractive, sturdy. Complete with five-year warranty on hermetically sealed refrigeration circuit. Will sell all or any portion of 49 at $118.00 each subject to prior sale. REMCOR PRODUCTS COMPANY, 321 E. Grand Avenue, Chicago 11, Illinois.

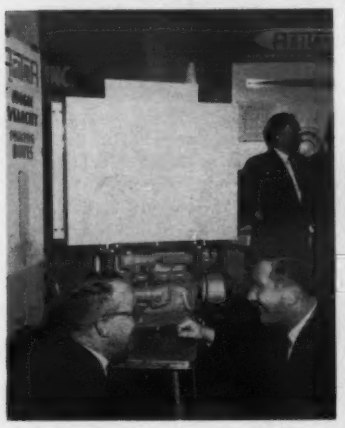
ATTENTION REFRIGERATION Servicemen: Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

HIGHLY QUALIFIED man with over 15 years' experience in sales, business, engineering, marketing, administration in air conditioning and refrigeration desires working and financial association with reputable manufacturer, distributor or contractor in N.Y.C. general area. 35 years, married, energetic; M.S., B.S. and general business education. BOX A6458, Air Conditioning, Heating & Refrigeration News.

What Was New

At the Southwest Exposition



NEW HIGH VELOCITY MIXING BOX, a two-motor constant volume unit offered by Air Devices, Inc. is examined by J. C. O'Day, Air Devices research engineer (l.) and Allen Bullard, president of the Little Rock Ark. chapter of ASHRAE.

SPORLAN SYSTEM CLEANER for hermetic motor burn-out and for new remote installations gets concentrated attention of Dave Lawson, Sporlan Valve Co. southeastern district manager (l.) and Herbert Bettlach of Airtherm Mfg. Co.

TEMPERATURE SENSITIVE sequence switch for compressor staging and related loading and unloading control introduced by Automatic Devices Div., American Machine & Metals, Inc. is flanked by A. M. Harp, special representative (l.), and J. A. Hindman, sales production manager.

HIGH PRESSURE air handling unit of Class II construction for static pressures up to 6 in. w.g. is center of attraction for H. L. Quinn, eastern sales manager for Recold Corp. (l.), and R. E. Reese, sales manager of Internationol, Inc.

LIMIT CONTROL designed to shut off baseboard heating system if unsafe temperature condition exists due to blockage of air passage at any point is demonstrated at White-Rodgers Co. booth by (l. to r.) Gerry Powell, W-R sales manager; Bob Cummins, Marlo Coil Co.; and James Rodgers, Jr., technical sales manager.

DEMONSTRATING HOW MUCH COMPACTING has occurred since the 1st Southwest Air Conditioning Exposition in 1950, R. C. Robertson, vice president and director of sales for Acme Industries, Inc. (r.), shows the 17½-hp. packaged chiller (background) displayed at that show as compared with the 1960 model in foreground. D. G. Merrill, Acme field sales manager (l.), and Olan J. Hill, Acme representative in Louisville, look on.

DRYOMATIC MODEL 50 dehumidifier delivers 50 c.f.m. of dry air by use of two beds of permanent silica gel drying agent. Operation of beds is alternated every 1½ hours by timer, says Anthony Hass, sales manager.

FIRST MEDIUM and large tonnage absorption gas air conditioner to provide both cooling and heating—a 25-ton unit—was displayed by Arkla Air Conditioning Corp. Gordon Morrow, Walters, Okla. contractor (l.), and C. B. Weeaks, Comanche, Okla. contractor (r.), get the story on the direct fired unit from Russell L. Brown, Arkla's manager of heating and air conditioning products.

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keep operating efficiency UP

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ANCO Condenser Cleaner removes scale and rust from condensers within 2 to 15 hours, depending on scale thickness and composition. Following application, head pressure drops to normal and the condenser's efficiency is restored. Simply dissolve this dry formula in sump while system operates. It works quickly and safely and is equally effective in evaporative condensers and those with separate cooling towers.

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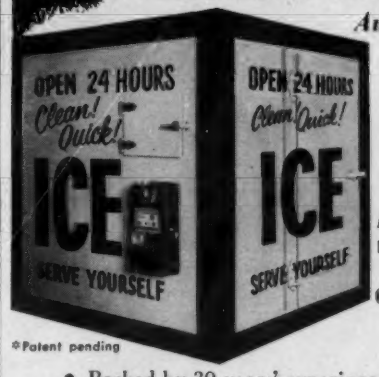

*Patent pending

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ASHRAE Meeting--

(Concluded from Page 4, Col. 5)

of noise, and that the fan noise is attenuated by the elbows, filters, and coils of a system. However, as the high-velocity air passes through these components, each becomes an individual noise generator.

As a result, a condition in the duct system may be reached where the noise-generation level of the components begins to exceed the attenuated sound level from the fan. With the increasing prevalence of high-velocity systems, stated Kerka, information on the noise-generation of the components must be known to predict accurately the expected levels within the duct, and ultimately within the occupied space.

The laboratory studies were aimed at developing a correlation of the sound attenuation and generation in elbows versus size, aspect ratio, and angle. Among the findings:

Noise-generation levels of vaned elbows are significant, and in general may be only about 10 db less than the level of the fan in the system. The noise-generation level in the low frequencies of vaned elbows of the same angle increases markedly as the size increases.

Psychrometric Chart Discussed

Some lively discussion on a basic tool of air conditioning developed in the psychrometric chart symposium staged Wednesday morning.

It revolved around the question whether a more detailed chart, which could be desirable for some purposes, would prove a help or hindrance to the working engineer calculating the average system.

There was also considerable discussion, limited only by the program time schedule, following presentation of an ASHRAE laboratory study of human reaction to temperature and humidity in which it was indicated that relative humidity from 30% to 85% had little effect on comfort at temperatures from 76° to 78° F. in either summer or winter.

Even with the qualifications of the study, which was confined to sedentary individuals in still air with a uniform radiant environment about equal to the air temperature, the dismissal of relative humidity as an important factor was seriously questioned by several.

Papers of Special Interest To Refrigeration Engineers

Two papers were of special interest to refrigeration engineers.

Formation of frost on bare pipe coils cooling air by natural convection actually improves heat transfer, and defrosting shouldn't be necessary until air passages between the coils are blocked completely by frost, according to research conducted by Prof. W. F. Stoecker at the University of Illinois.

In another paper it was shown mathematically that no insulation is needed beneath the floor of a 35° F. storage room although a vapor barrier may be advisable in some instances.

Dallas Exposition Features--

(Concluded from Page 1, Col. 5)

of liquid chillers, and manufacturers who once produced liquid chillers exclusively are now offering package air conditioners.

Engine's Waste Heat Used by Reverse Cycle Air Conditioner

Among the items that caught the eye were a 10-ton reverse cycle unit, gas engine driven, which utilizes the waste heat of the engine to augment the heating phase. Also shown was a packaged 50-ton air conditioner with a built-in evaporative condenser, which may be installed inside a building as a self-contained unit.

A "latent storage refrigeration system" for use in air conditioning such places where high peak loads prevail for only a few hours at a time and at intervals. The "refrigeration storage" unit chills water pumped through it for cooling purposes. Boiler water may be circulated through the same piping system for heating.

Air-Cooled Condenser Refinements Noted

Continuing changes and refinements in air-cooled condenser design were noted. One new air-cooled condenser has a vertical discharge which is said to be unaffected by wind direction. Another vertical discharge model has a winter control having balanced circuitry. An air-cooled condenser of circular design has tapered fin construction, sloping tube drainage of condensate and compressor oil, and claims true counterflow.

Control systems are keeping in line with the "more engineering at the factory" trend emphasized by manufacturers of air conditioning. Assemblies of controls or control components for complex temperature and humidity conditions are available which require relatively simple hook-ups in the field.

One area of the show that drew considerable attention was a gas air conditioning center, where new gas-powered chillers and air conditioners now in production shared space with a prototype of a new gas engine driven condensing unit shown for the first time as a complete unit.

Ceramic Cooling Tower

One manufacturer displayed a ceramic cooling tower, which he claims will provide more permanence and handle higher temperature water than towers made of other materials.

New electric baseboard heating for homes and electric radiant heating units for spot heating applications were displayed profusely. One manufacturer demonstrated that splashing ing water on the quartz tube of his infrared heater created no hazard.

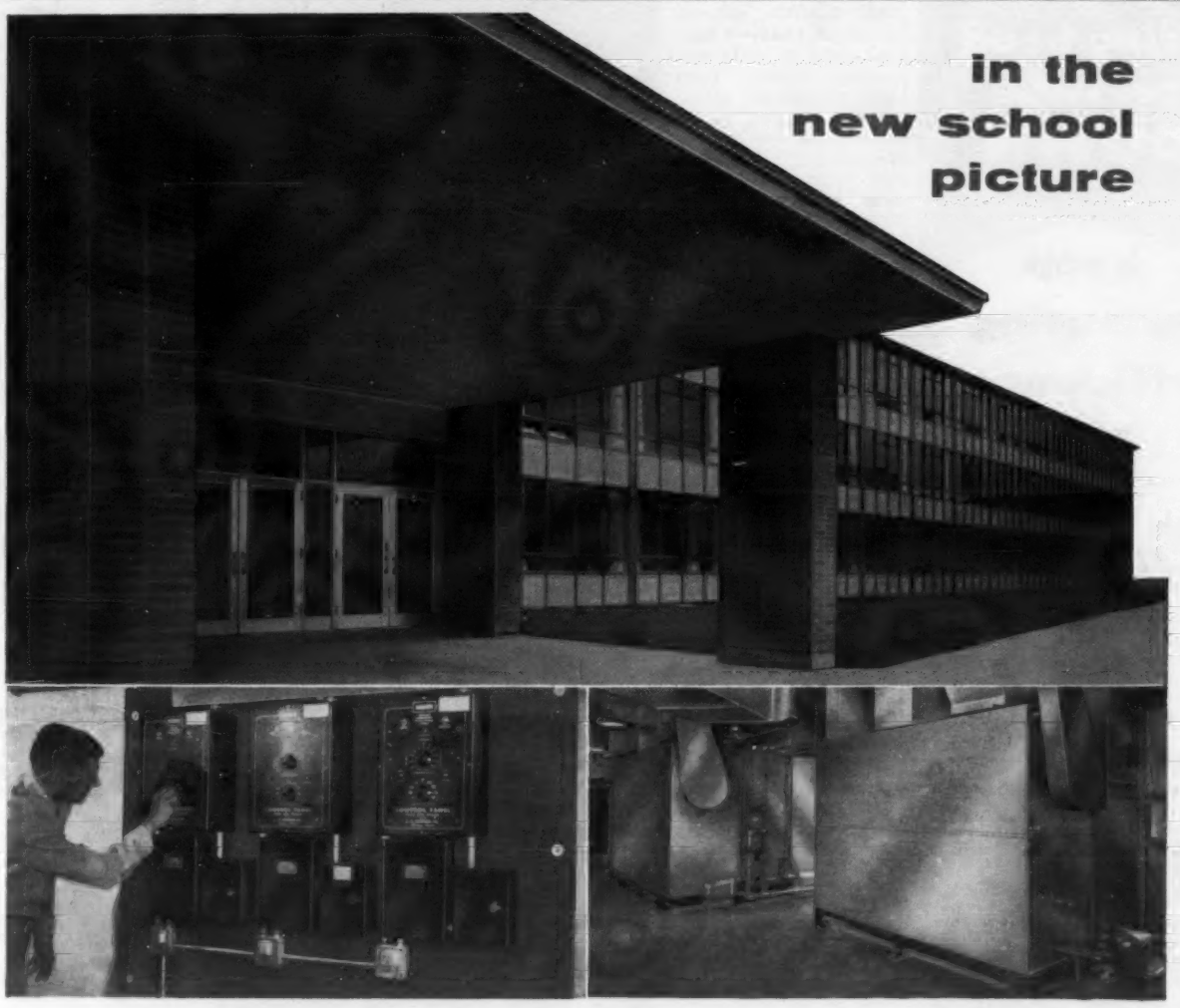
Another showed a roll filter combined with an electronic air cleaner.

A valve manufacturer came up with a packaged system cleaner to protect compressors on new remote installations and after burn-outs.

Streamlined Furnaces

Furnace manufacturers were showing more streamlined models, packing more capacity in less space. One displayed a furnace that had space for addition of a cooling coil within the furnace casing. Another showed a duct heater with glass-lined heat exchanger.

A new service item was a hand valve for refrigerant cylinders.



Dunham-Bush solves your Heating-Air Conditioning problems

At the recently opened, beautiful new three million dollar Regina Dominican Catholic High School in Wilmette, Illinois, there's a lesson to be learned by anyone connected with school building or modernization.

The problem: How to achieve economy and dependability in school heating?

The answer: Install, as they did in Wilmette, heating products from one-source—one-responsibility . . . Dunham-Bush, Inc.

Discuss your building problems and answers with your nearby Dunham-Bush sales engineer. The following did to complete satisfaction of building team, school authorities, pupils and parents: Architect, Barry & Kay; Consulting Engineer, Wm. T. Brookman; Contractor, Dearborn Plumbing & Heating; Wholesaler, James B. Clow.

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